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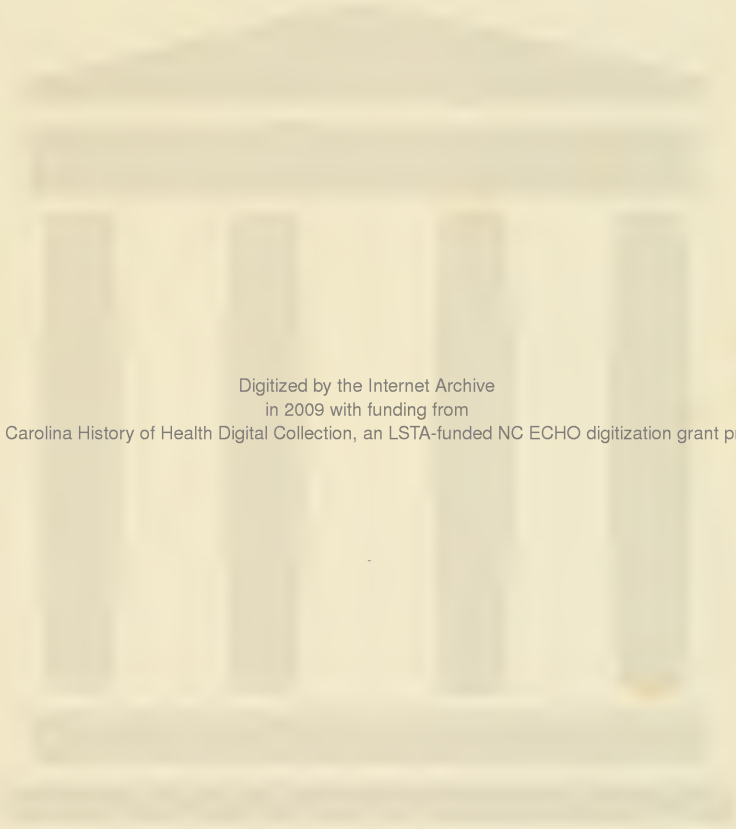

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Carl V. Reynolds

TRANSACTIONS

OF THE

MEDICAL SOCIETY

OF THE

STATE OF NORTH CAROLINA

SIXTY-SEVENTH ANNUAL MEETING

HELD AT

CHARLOTTE, NORTH CAROLINA

APRIL 20, 21, 22, 1920

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"It is understood that the Society is not to be considered as endorsing all the views and opinions of authors of papers published in the Transactions of the Society."—*Extract from By-Laws, chapter 10, section 8.*

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EARLY HISTORY OF THE NORTH CAROLINA MEDICAL SOCIETY FROM ORGANIZATION TO 1804

Date	Place	President	Vice-President	Corresponding Secretary	Secretary	Recording Secretary	Treasurer	Censors
Dec. 24, 1799, or April 16, 1800	Raleigh	Richard Fenner	Nathaniel Loomis, John Claiborne	Calvin Jones		Wm. B. Hill	Cargill Massenburg	Sterling Wheaton, James Webb, Jas. John Pasteur Jason Hand
Dec. 1, 1800	Raleigh	Richard Fenner			Sterling Wheaton			
Dec. 1, 1801	Raleigh	John C. Osborne	Thomas Mitchel, Richard Fenner	Calvin Jones	Sterling Wheaton		Cargill Massenburg	James Webb, John Sibley
1802	Raleigh	John C. Osborne		Calvin Jones				
1803	Raleigh	John C. Osborne		Calvin Jones				
1804	Raleigh	John C. Osborne		Calvin Jones				

ROSTER OF OFFICERS OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM 1849 TO 1920

*Missing Data Not to Be Found in Record

	Date	Place	Members in Attendance		Vice-Presidents	Secretary	Treasurer	Members on Roll*	Honorary Members*	Honorary Fellows*
	1849	Raleigh	25	F. J. Hill		W. H. McKee		25		
1	1850	Raleigh	21	E. Strudwick	F. J. Haywood, C. E. Johnson, J. W. Williamson, W. G. Thomas.	W. H. McKee	W. G. Hill	38	9	
2	1851	Raleigh	23	E. Strudwick	C. E. Johnson	W. H. McKee	W. G. Hill	46	9	
3	1852	Wilmington	38	J. E. Williamson	Thomas N. Cameron, William G. Hill, Johnston B. Jones, N. J. Pittman.	E. B. Haywood	J. J. W. Tucker	72	12	
4	1853	Fayetteville	24	J. E. Williamson	William G. Hill, Johnston P. Jones, J. B. G. Myers, N. J. Pittman.	W. W. Harris	Daniel Dupree	80	14	
5	1854	Raleigh	37	J. H. Dickson	N. J. Pittman, J. B. G. Myers, J. Graham Tull, A. D. McLean.	S. S. Satchwell	Daniel Dupree	84	17	
6	1855	Salisbury	23	J. H. Dickson	J. Graham Tull, Owen Hadley, A. D. McLean, Hugh Kelly.	S. S. Satchwell	J. B. Dunn	96	18	
7	1856	Raleigh	35	C. E. Johnson	Marcellus Whitehead, E. R. Gibson, Johnston B. Jones, O. F. Manson.	S. S. Satchwell	J. B. Dunn	101	22	
8	1857	Edenton	25	C. E. Johnson	Marcellus Whitehead, O. F. Manson, H. W. Faison, E. T. Gibson.	W. G. Thomas	J. B. Dunn	113	16	
9	1858	New Bern	69	W. H. Mckee	Edward Warren, C. W. Graham, Caleb Winslow, A. B. Pierce.	W. G. Thomas	J. B. Dunn	172	18	
10	1859	Statesville	81	W. H. McKee	James G. Ramsey, P. E. Hines, J. R. Mercer, W. T. Howard.	W. G. Thomas	C. W. Graham			
11	1860	Washington	64	N. J. Pittman	P. T. Henry, R. H. Winborne, M. Whitehead, T. S. Leach.	W. G. Thomas	C. W. Graham	233	18	
12	1861	Morganton	23	N. J. Pittman	J. J. Summerell, C. T. Murphy, G. W. Hodges, W. A. B. Norcom.	W. G. Thomas	C. W. Graham	244	18	
13	1866	Raleigh	20	J. J. Summerell		W. G. Thomas	C. W. Graham			
14	1867	Tarboro	41	W. G. Thomas	E. Burke Haywood, R. H. Winborne, W. L. Barrow, J. W. Jones.	S. S. Satchwell	C. W. Graham	288	11	
15	1868	Warrenton	27	S. S. Satchwell	Hugh Kelly, George A. Foote, Charles J. O'Hagan, J. H. Baker.	Thomas F. Wood	J. W. Jones			
16	1869	Salisbury	36	E. B. Haywood	Thomas E. Wilson, A. B. Pierce, C. T. Murphy, M. A. Locke.	Thomas F. Wood	J. W. Jones			
17	1870	Wilmington	38	C. J. O'Hagan	E. A. Anderson, F. N. Lucky, W. R. Sharpe, R. L. Payne.	Thomas F. Wood	J. W. Jones			
18	1871	Raleigh	35	Hugh Kelly	D. N. Patterson, R. C. Pearson, J. B. Seaby, G. L. Kirby.	Thomas F. Wood	J. W. Jones			
19	1872	New Bern	34	W. G. Hill	H. W. Faison, R. I. Hicks, G. H. Macon, W. A. B. Norcom.	James McKee	J. W. Jones			

ROSTER OF OFFICERS OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM 1849 TO 1920—Continued
*Missing Data Not to Be Found in Record

	Date	Place	Members in Attendance	President	Vice-Presidents	Secretary	Treasurer	Members on Roll*	Honorary Members*	Honorary Fellows*
20	1873	Statesville	43	M. Whitehead	W. T. Ennett, William Little, Charles Duffy, T. P. Jerman.	James McKee	H. T. Bahnson			
21	1874	Charlotte	56	W. A. B. Norcom	J. B. Jones, R. F. Lewis, C. G. Cox, J. L. Knight.	James McKee	H. T. Bahnson			
22	1875	Wilson	60	J. W. Jones	Walter Debnam, J. A. Gibson, William Little, D. N. Patterson.	James McKee	H. T. Bahnson	148	5	
23	1876	Fayetteville	33	Peter E. Hines	J. H. Baker, G. G. Smith, T. D. Raigh, J. K. Hall.	James McKee	H. T. Bahnson	157	4	
24	1877	Salem	42	George A. Foote	J. K. Hall, B. W. Robinson, A. Holmes, A. A. Hill.	James McKee	A. G. Carr	177	4	
25	1878	Goldsboro	79	R. L. Payne	E. M. Rountree, Richard Anderson, S. B. Flowers, L. A. Smith.	L. J. Picot	A. G. Carr	194	6	
26	1879	Greensboro	109	Chas. Duffy, Jr.	J. A. Gibson, Willis Alston, James McKee, A. A. Hill.	L. J. Picot	A. G. Carr	198	6	
27	1880	Wilmington	105	J. F. Shafiner	J. K. Hall, W. C. McDuffie, W. R. Wilson, R. F. Lewis.	L. J. Picot	A. G. Carr	225	6	
28	1881	Asheville	92	R. B. Haywood	J. E. McRee, W. H. Lilly, R. H. Speight, W. J. H. Bellamy.	L. J. Picot	A. G. Carr	254	6	
29	1882	Concord	65	Thos. F. Wood	T. J. Moore, D. J. Cain, S. E. Evans, John McDonald.	L. J. Picot	A. G. Carr	297	7	
30	1883	Tarboro	112	J. K. Hall	A. W. Knox, J. M. Hadley, E. S. Foster, John Whitehead.	L. J. Picot	A. G. Carr	310	7	
31	1884	Raleigh	112	A. B. Pierce	F. W. Potter, G. W. Graham, R. Dillard, G. W. Long.	L. J. Picot	A. G. Carr	348	7	
32	1885	Durham	173	W. C. McDuffie	James McKee, T. E. Anderson, W. H. Whitehead, A. G. Carr.	W. C. Murphy	R. L. Payne, Jr.	424	6	
33	1886	New Bern	113	Joseph Graham	H. T. Bahnson, L. J. Picot, J. L. McMillan, W. W. Faison.	J. M. Baker	R. L. Payne, Jr.	438	7	
34	1887	Charlotte	112	H. T. Bahnson	G. G. Smith, J. L. Nicholson, C. M. Poole, H. B. Ferguson.	J. M. Baker	R. L. Payne, Jr.	452	7	
35	1888	Fayetteville	133	T. D. Haigh	W. T. Ennett, J. A. Dunn, T. E. Anderson	J. M. Baker	C. M. Poole	306	6	
36	1889	Elizabeth C.	50	W. T. Ennett	W. J. Jones, S. W. Stevenson, G. W. Long	J. M. Baker	C. M. Poole	410	6	
37	1890	Oxford	160	G. G. Thomas	R. L. Payne, Jr., Richard Dillard, S. D. Booth.	J. M. Hays	C. M. Poole	414	6	
38	1891	Asheville	135	R. H. Lewis	S. W. Battle, J. L. Nicholson, W. H. Lilly	J. M. Hays	C. M. Poole	422	6	
39	1892	Wilmington	162	W. T. Cheatham	T. S. Burbank, J. W. Long, W. H. H. Cobb, W. D. Hilliard.	J. M. Hays	C. M. Poole	431	6	
40	1893	Raleigh	221	J. W. McNeill	W. C. Galloway, H. H. Harris, J. M. Hadley, Thomas Hill.	R. D. Jewett	M. P. Perry	447	5	3

41	1894	Greensboro	166	W. H. H. Cobb	J. A. Hodge, R. W. Tate, Willis Alston, M. H. Fleteher.	R. D. Jewett	M. P. Perry	454	5	3
42	1895	Goldsboro	-----	J. H. Tucker	J. Howell Way, W. H. Harrell, O. McMullan, C. A. Misenheimer.	R. D. Jewett	M. P. Perry	436	7	3
43	1896	Winston-Salem	158	R. L. Payne	S. D. Booth, J. P. Munroe, J. A. Burroughs, J. E. Grimsley.	R. D. Jewett	M. P. Perry	452	7	3
44	1897	Morehead City	103	P. L. Murphy	J. C. Walton, A. A. Kent, M. R. Adams, B. L. Long.	R. D. Jewett	M. P. Perry	406	6	3
45	1898	Charlotte	-----	Francis Duffy	E. C. Register, A. T. Cotton, J. B. H. Knight, F. H. Russell.	R. D. Jewett	M. P. Perry	437	6	21
46	1899	Asheville	152	L. J. Picot	I. W. Faison, J. W. White, H. H. Dodson, W. C. Brownson.	Geo. W. Pressley	G. T. Sikes	489	6	16
47	1900	Tarboro	115	George W. Long	C. M. Poole, James M. Parrott, T. B. Williams, W. D. Hilliard.	Geo. W. Pressley	G. T. Sikes	482	6	21
48	1901	Durham	186	Julian M. Baker	M. H. Fletcher, C. A. Julian, D. A. Stanton, E. M. Summerell.	Geo. W. Pressley	G. T. Sikes	515	5	18
49	1902	Wilmington	147	Robert S. Young	A. G. Carr, E. D. Dixon-Carroll, I. M. Taylor, J. M. Parrott.	Geo. W. Pressley	G. T. Sikes	546	5	20
50	1903	Hot Springs	155	A. W. Knox	E. G. Moore, C. A. Julian, W. W. McKenzie, J. L. Nicholson.	J. Howell Way	G. T. Sikes	530	6	19
51	1904	Raleigh	326	H. B. Weaver	John Hey Williams, John C. Rodman, S. F. Pfohl.	J. Howell Way	G. T. Sikes	1,033	8	17
52	1905	Greensboro	361	David T. Tayloe	C. A. Juliaa, John T. Burrus, I. W. Faison	J. Howell Way	G. T. Sikes	1,175	8	17
53	1906	Charlotte	406	Ed. C. Register	L. B. McBrayer, W. H. Cobb, W. O. Spencer.	J. Howell Way	G. T. Sikes	1,234	8	16
54	1907	Morehead City	217	Samuel D. Booth	C. M. Strong, J. E. McLoughlin, W. F. Hargrave.	David A. Stanton	H. McK. Tucker	888	8	16
55	1908	Winston-Salem	372	J. Howell Way	J. E. Stokes, J. A. Turner, W. H. Dixon	David A. Stanton	H. McK. Tucker	998	7	28
56	1909	Asheville	337	J. F. Highsmith	C. M. Poole, D. A. Garrison, D. O. Dees	David A. Stanton	H. McK. Tucker	1,067	7	25
57	1910	Wrightsville Beach	276	J. A. Burroughs* E. J. Wood	E. J. Wood, John Q. Myers, L. D. Wharton.	David A. Stanton	H. D. Walker	1,080	8	35
58	1911	Charlotte	412	C. M. VanPoole	J. V. McGougan, W. E. Warren, L. N. Glenn.	David A. Stanton	H. D. Walker	880	8	45
59	1912	Hendersonville	296	A. A. Kent	J. P. Munroe, W. P. Horton, J. G. Murphy	David A. Stanton	H. D. Walker	950	8	44
60	1913	Morehead City	232	J. P. Munroe	F. R. Harris, E. S. Bulluck, L. B. Morse	John A. Ferrell	H. D. Walker	1,128	8	47
61	1914	Raleigh	431	J. M. Parrott	E. T. Dickinson, J. T. J. Battle, D. E. Sevier.	John A. Ferrell	H. D. Walker	1,228	8	47
62	1915	Greensboro	443	L. B. McBrayer	J. J. Phillips, C. W. Moseley, S. M. Crowell.	John A. Ferrell	H. D. Walker	1,221	9	68
63	1916	Durham	406	M. H. Fletcher	J. L. Nicholson, L. N. Glenn, W. H. Hardison.	Benj. K. Hays	W. M. Jones	1,228	10	79
64	1917	Asheville	280	Charles O'H. Laughinghouse	D. J. Hill, J. L. Spruill, J. H. Shuford.	Benj. K. Hays	W. M. Jones	1,271	11	81
65	1918	Pinehurst	192	I. W. Faison	Wm. deB. MacNider, Jos. B. Greene, Ben F. Royal.	Benj. K. Hays	W. M. Jones	-----	----	----
66	1919	Pinehurst	335	Cyrus Thompson	J. W. Halford, T. W. Davis, A. McN. Blair.	Benj. K. Hays	B. K. Hays	1,306	11	117
67	1920	Charlotte	479	C. V. Reynolds	H. D. Walker, F. Stanley Whitaker, Thos. I. Fox.	Benj. K. Hays	B. K. Hays	1,496	12	127

*Died during term of office.

PAST MEMBERS BOARD OF MEDICAL EXAMINERS OF THE STATE OF NORTH CAROLINA

Charles H. Dickson, President, Wilmington—1859-1866
Charles E. Johnson, Raleigh—1859-1866
Caleb Winslow, Hertford—1859-1866
Otis F. Manson, Townsville—1859-1866
William H. McKee, Raleigh—1859-1866
Christopher Happoldt, Morganton—1859-1866
J. Graham Tull, New Bern—1859-1866
Samuel T. Iredell, Secretary—1859-1866

N. J. Pittman, President, Tarboro—1866-1872
E. Burke Haywood, Raleigh—1866-1872
R. H. Winborne, Edenton—1866-1872
S. S. Satchwell, Rocky Point—1866-1872
J. J. Summerell, Salisbury—1866-1872
R. B. Haywood, Raleigh—1866-1872
M. Whitehead, Salisbury—1866-1872
J. F. Shaffner, Salem—1866-1872
William Little, Secretary—1866-1872

Charles J. O'Hagan, President, Greenville—1872-1878
W. A. B. Norcom, Edenton—1872-1878
C. Tate, Murphy—1872-1878
George A. Foote, Warrenton—1872-1878
J. W. Jones, Tarboro—1872-1878
R. L. Payne, exington—1872-1878
Charles Duffy, Jr., Secretary, New Bern—1872-1878

P. E. Hines, President, Raleigh—1878-1884
T. D. Haigh, Fayetteville—1878-1884
George L. Kirby, Goldsboro—1878-1884
Thomas F. Wood, Wilmington—1878-1884
Joseph Graham, Charlotte—1878-1884
H. B. Bahnson, Secretary, Salem—1878-1884
R. H. Lewis, Raleigh—1880-1884

William R. Wood, President, Scotland Neck—1884-1890
A. W. Knox, Raleigh—1884-1890
Francis Duffy, New Bern—1884-1890
P. L. Murphy, Morganton—1884-1890
Willis Alston, Littleton—1884-1890
W. H. J. Bellamy, Secretary, Wilmington—1884-1890
J. A. Reagan, Weaverville—1884-1890

R. L. Payne, Norfolk, Va.—1890-1892
George W. Purefoy, Asheville—1890-1892
George G. Thomas, Wilmington—1890-1894
Robert S. Young, Concord—1890-1894
George W. Long, Graham—1890-1894

W. H. Whitehead, President, Rocky Mount—1890-1896
L. J. Picot, Secretary, Littleton—1890-1896

Julian M. Baker, President, Tarboro—1892-1898
H. B. Weaver, Asheville—1892-1898
T. S. Burbank, Wilmington—1894-1898
J. M. Hayes, Greensboro—1894-1897
D. T. Tayloe, President, Washington—1896-1902
R. H. Whitehead, Chapel Hill—1896-1897
Thomas E. Anderson, Secretary, Statesville—1896-1900
Kemp P. Battle, Jr., Raleigh—1897-1902
J. Howell Way, Secretary, Waynesville—1897-1902
W. H. H. Cobb, Goldsboro—1898-1902
Albert Anderson, Raleigh—1898-1902

E. C. Register, President, Charlotte—1898-1902
Thomas S. McMullan, Hertford—1900-1902
John C. Walton, Richmond, Va.—1900-1902
George W. Pressley, Secretary, Charlotte—1902-1906

A. A. Kent, President, Lenoir—1902-1908
G. T. Sikes, Secretary, Grissom—1906-1908
Charles O'Hagan Laughinghouse, President, Greenville—1902-1908
M. H. Fletcher, President, Asheville—1902-1908
James M. Parrott, Kinston—1902-1908
J. T. J. Battle, Greensboro—1902-1908
Frank H. Russell, Wilmington—1902-1908

John Bynum, President, Winston-Salem—1908-1914
John C. Rodman, Washington—1908-1914
Benjamin K. Hays, Secretary—1808-1914
L. B. McBrayer, Asheville—1908-1914
William W. McKenzie, Salisbury—1908-1914
Henry H. Dodson, Greensboro—1908-1914
J. L. Nicholson, Richlands—1908-1914

J. Q. Myers, President, Charlotte—1914-1920
J. F. Highsmith, Fayetteville—1914-1920
H. A. Royster, Secretary, Raleigh—1914-1920
E. G. Moore, Elm City—1914-1920
J. G. Blount, Washington—1914-1920
M. L. Stevens, Asheville—1914-1920
Charles T. Harper, Wilmington—1914-1925

BOARD OF MEDICAL EXAMINERS, 1920-1926

J. G. Murphy, Wilmington, Pharmacology, Materia Medica, and Therapeutics.
L. A. Crowell, President, Lincolnton, Anatomy and Embryology.
L. N. Glenn, Gastonia, Surgery.

*Died 1915.

K. P. B. Bonner, Secretary, Morehead City, Obstetrics, Gynecology, and Pediatrics.
W. P. Holt, Duke, Practice of Medicine.
W. M. Jones, Greensboro, Chemistry, Physiology and Hygiene.
C. A. Shore, Raleigh, Pathology, Bacteriology, Histology.

ROSTER OF MEMBERS NORTH CAROLINA STATE BOARD OF HEALTH FROM ORGANIZATION IN 1877 TO 1919

Name	Address	Appointed by	Term
S. S. Satchwell, M.D., President	Rocky Point	State Society	1877 to 1878
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1877 to 1878
Joseph Graham, M.D.	Charlotte	State Society	1877 to 1878
Charles Duffy, Jr., M.D.	New Bern	State Society	1877 to 1878
Peter E. Hines, M.D.	Raleigh	State Society	1877 to 1878
George A. Foote, M.D.	Warrenton	State Society	1877 to 1878
S. S. Satchwell, M.D., President	Rocky Point	State Society	1878 to 1884
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1878 to 1884
Charles J. O'Hagan,M. D., President	Greenville	State Society	1878 to 1882
George A. Foote, M.D.	Warrenton	State Society	1878 to 1882
Marcellus Whitehead, M.D.	Salisbury	State Society	1878 to 1880
R. L. Payne, M.D.	Lexington	State Society	1878 to 1880
H. G. Woodfin, M.D.	Franklin	Gov. Z. B. Vance	1878 to 1880
A. R. Ledeux, Chemist	Chapel Hill	Gov. Z. B. Vance	1878 to 1880
William Cain, Civil Engineer	Charlotte	Gov. Z. B. Vance	1878 to 1880
R. L. Payne, M.D.	Lexington	State Society	1881 to 1887
M. Whitehead, M.D., President	Salisbury	State Society	1881 to 1884
J. M. Lyle, M.D.	Franklin	Gov. T. J. Jarvis	1881 to 1883
William Cain, Civil Engineer	Charlotte	Gov. T. J. Jarvis	1881 to 1883
W. G. Simmons, Chemist	Wake Forest	Gov. T. J. Jarvis	1881 to 1883
J. W. Jones, M.D., President	Wake Forest	State Society	1883 to 1889
John McDonald	Washington	State Society	1883 to 1889
S. H. Lyle, M.D.	Franklin	Gov. T. Jarvis	1883 to 1885
W. G. Simmons, Chemist	Wake Forest	Gov. T. Jarvis	1883 to 1885
Arthur Winslow, Civil Engineer	Raleigh	Gov. T. Jarvis	1883 to 1886
R. H. Lewis, M.D.	Raleigh	State Board of Health	1884 to 1893
Thomas F. Wood, Secretary	Wilmington	State Society	1885 to 1887
William D. Hilliard, M.D.	Asheville	State Society	1885 to 1891
Arthur Winslow, Civil Engineer	Raleigh	Goov. A. M. Scales	1885 to 1891
W. G. Simmons, Chemist	Wake Forest	Goov. A. M. Scales	1885 to 1887
J. H. Tucker, M.D.	Henderson	Goov. A. M. Scales	1885 to 1887
R. H. Lewis, M.D., Secretary	Raleigh	State Society	1887 to 1897
H. T. Bahnson, M.D., President	Winston-Salem	State Society	1887 to 1893
Authur Winslow, Civil Engineer	Raleigh	Goov. A. M. Scales	1887 to 1888
W. G. Simmons, Chemist	Wake Forest	Goov. A. M. Scales	1887 to 1889
J. H. Tucker, M.D.	Henderson	Goov. A. M. Scales	1887 to 1889
J. L. Ludlow, Civil Engineer	Winston	Gov. D. G. Fowle	1888 to 1891
J. H. Tucker, M.D.	Hendereson	Gov. D. G. Fowle	1888 to 1891
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. D. G. Fowle	1888 to 1891
J. L. Ludlow, Civil Engineer	Winston	State Society	1889 to 1893
J. A. Hodges, M.D.	Fayetteville	State Society	1889 to 1892
J. M. Baker, M.D.	Tarboro	Gov. T. M. Holt	1889 to 1893
J. H. Tucker, M.D.	Henderson	Gov. T. M. Holt	1891 to 1893
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. T. M. Holt	1891 to 1893
J. L. Ludlow, Civil Engineer	Winston	State Society	1891 to 1892
Thomas F. Wood, M.D., Secretary*	Wilmington	State Board of Health	1891 to 1897
George G. Thomas, M.D., President	Wilmington	State Society	1892 to 1897
S. Westray Battle, M.D.	Asheville	State Society	1891 to 1895
W. H. Harrell, M.D.	Williamston	State Board of Health	1892 to 1895
John Whitehead, M.D.	Salisbury	Gov. Elias Carr	1893 to 1895
W. H. G. Lucas	White Hall	Gov. Elias Carr	1893 to 1895
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. Elias Carr	1893 to 1895
John C. Chase, Civil Engineer	Wilmington	Gov. Elias Carr	1893 to 1895
R. H. Lewis, Secretary	Raleigh	Gov. Elias Carr	1894 to 1897
W. P. Beall, M.D.	Greensboro	Gov. Elias Carr	1895 to 1897
W. J. Lumsden, M.D.	Elizabeth City	State Society	1895 to 1897
John Whitehead, M.D.	Salisbury	State Society	1895 to 1897
W. H. Harrell, M.D.	Williamston	Gov. Elias Carr	1895 to 1897
W. P. Beall, M.D.	Greensboro	Gov. Elias Carr	1895 to 1897
R. H. Lewis, M.D., Secretary	Raleigh	Gov. Elias Carr	1895 to 1897
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. Elias Carr	1895 to 1897
John C. Chase, Civil Engineer	Wilmington	Gov. D. L. Russell	1897 to 1899
Charles J. O'Hagan, M.D.	Raleigh	Gov. D. L. Russell	1897 to 1899
John D. Spicer, M.D.	Goldsboro	Gov. D. L. Russell	1897 to 1899
J. L. Nicholson, M.D.	Richlands	Gov. D. L. Russell	1897 to 1899
R. H. Lewis, M.D., Secretary	Raleigh	Gov. D. L. Russell	1897 to 1899
A. W. Shaffer, Civil Engineer	Raleigh	Gov. D. L. Russell	1899 to 1901
Charles O'Hagan, M.D.	Greenville	Gov. D. L. Russell	1899 to 1901
J. L. Nicholson, M.D.	Richlands	Gov. D. L. Russell	1899 to 1901
Albert Anderson, M.D.	Wilson	Gov. D. L. Russell	1899 to 1901
R. H. Lewis, M.D., Secretary	Raleigh	Gov. D. L. Russell	1899 to 1901
A. W. Shaffer, Civil Engineer	Raleigh	Gov. D. L. Russell	1899 to 1901

*Died in 1892, leaving a five-year unexpired term, which was filled by the Board.

ROSTER OF MEMBERS—Continued

Name	Address	Appointed by	Term
George G. Thomas, M.D., President	Wilmington	State Society	1899 to 1901
S. Westray Battle, M.D.	Asheville	State Society	1899 to 1901
H. W. Lewis, M.D.	Jackson	State Society	1899 to 1901
H. H. Dodson, M.D.	Milton	State Society	1899 to 1901
R. H. Lewis, M.D., Secretary	Raleigh	Gov. C. B. Aycocok	1901 to 1907
W. P. Ivey, M.D.	Lenoir	Gov. C. B. Aycocok	1901 to 1907
George G. Thomas, M.D., President	Wilmington	Gov. C. B. Aycocok	1901 to 1905
Francis Duffy, M.D.	New Bern	Gov. C. B. Aycocok	1901 to 1905
J. L. Ludlow, Civil Engineer	Winston	Gov. C. B. Aycocok	1901 to 1905
S. Westray Battle, M.D.	Asheville	State Society	1901 to 1907
H. W. Lewis, M.D.	Jackson	State Society	1901 to 1907
W. H. Whitehead, M.D.	Rocky Mount	State Society	1901 to 1905
J. L. Nicholson, M.D.	Richlands	State Society	1901 to 1905
J. L. Ludlow, Civil Engineer	Winston	Gov. C. B. Aycocok	1903 to 1909
J. Howell Way, M.D.	Waynesville	Gov. R. B. Glenn	1905 to 1911
W. O. Spencer, M.D.	Winston	Gov. R. B. Glenn	1905 to 1911
George G. Thomas, M.D., President	Wilmington	State Society	1905 to 1911
Thomas E. Anderson, M.D.	Statesville	State Society	1905 to 1911
R. H. Lewis, M.D.	Raleigh	Gov. R. B. Glenn	1907 to 1913
E. C. Register, M.D.	Charlotte	Gov. R. B. Glenn	1907 to 1913
David T. Tayloe, M.D.	Washington	State Society	1907 to 1913
James A. Burroughs, M.D.*	Asheville	State Society	1907 to 1909
J. E. Ashcraft, M.D.	Monroe	State Board of Health	1909 to 1913
J. L. Ludlow, Civil Engineer	Winston-Salem	Gov. W. W. Kitchin	1909 to 1915
J. Howell Way, M.D., President	Waynesville	Gov. W. W. Kitchin	1911 to 1917
W. O. Spencer, M.D.	Winston-Salem	Gov. W. W. Kitchin	1911 to 1917
Thomas E. Anderson, M.D.	Statesville	State Society	1911 to 1917
Charles O'H. Laughinghouse, M.D.	Greenville	State Society	1911 to 1917
R. H. Lewis, M.D.	Raleigh	Gov. Locke Craig	1913 to 1919
Edw. J. Wood, M.D.	Wilmington	Gov. Locke Craig	1913 to 1919
A. A. Kent, M.D.	Lenoir	State Society	1913 to 1915
Cyrus Thompson, M.D.	Jacksonville	State Society	1913 to 1919
Fletcher R. Harris, M.D.	Henderson	State Board of Health	1913 to 1919
J. L. Ludlow, Civil Engineer	Winston-Salem	Gov. Locke Craig	1915 to 1921
J. Howell Way, M.D., President	Waynesville	Gov. T. W. Bickett	1917 to 1923
E. C. Register, M.D.*	Charlotte	Gov. T. W. Bickett	1917 to 1923
Thomas E. Anderson, M.D.	Statesville	State Society	1917 to 1923
Charles O'H. Laughinghouse, M.D.	Greenville	State Society	1917 to 1923
Cyrus Thompson, M.D.	Jacksonville	State Society	1919 to 1925
Fletcher R. Harris, M.D.	Henderson	State Society	1919 to 1925
R. H. Lewis, M.D.	Raleigh	Gov. T. W. Bickett	1919 to 1925
E. J. Tucker, D.D.S.	Roxboro	Gov. T. W. Bickett	1919 to 1925
A. J. Crowell	Charlotte	Gov. T. W. Bickett	1919 to 1923

*Died leaving unexpired term. †Resigned to become member of General Assembly.

STATUS OF SOCIETY MEMBERSHIP BY COUNTIES FOR YEARS 1907-1920

Counties	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920
Alamance	7	17	15	14	12	11	11	13	9	10	12	10	15	27
Alexander *a*														
Alleghany									2	2				
Anson	1	3	1	1	1	6	8	7				1	3	2
Ashe				1							11	15	8	7
Avery								8	7	9	9	7	6	4
Beaufort	15	15	11	11	16	15	14	14	14	14	10	11	10	14
Bertie	4	4	4	5	2	2	2	3	3	3	3	5	5	10
Bladen	4	3	3	3	4	4	5	7	7	6	9	8	9	8
Brunswick	4		4	2	2	2	5	4	5			2	2	2
Buncombe	47	48	54	58	63	64	69	68	70	71	74	76	81	83
Burke	10	9	10	13	12	11	13	15	17	17	16	17	6	11
Cabarrus	13	17	16	18	21	21	19	22	23	25	20	22	19	20
Caldwell	10	12	12	13	12	10	12	12	11	7	9	13	12	10
Camden *b*														
Carteret	9	10	7	7	6	7	6	7	7	9	7	4	7	9
Caswell	3	3	2	1	1	1	1	1	1	1	1	1	3	2
Catawba	10	9	12	12					15	13	18		5	18
Chatham	6	1	2	2	6		14	15	12	11	11	11	7	10
Cherokee			9	6	7	9	8	7	10	9	11	10	6	10
Chowan					7	5	8	9	7	4	3		6	8
Clay *c*														
Cleveland	14	14	13	13	14	15	15	16	13	13	16	16	17	19
Columbus	9	8	8	8	10	12	12	14	9	11	7	1	6	10
Craven	10	14	14	14	12	14	18	15	11	8	11	7	7	6
Cumberland	12	12	17	20	20	22	23	22	24	19	17	16	15	20
Currituck	6	3	3	6	4	4	4	6	7	6	6	1	5	5
Dare *d*														
Davidson	12	12	12	13	13	15	13	17	13	9	20	20	19	18
Davie	6	6	6	6	5	6				6	5	4	4	4
Duplin	8	8	10	10	9	8	9	7	4	7	10	9	9	10
Durham-Orange	15	18	24	26	28	31	32	38	40	41	44	35	33	45
Edgecombe	8	8	10	10	11	11	11	13	13	13	10	10	7	15
Forsyth	21	26	30	25	29	31	32	37	39	42	45	37	37	57
Franklin	10	10	9	11	11	11	10	10	12	11	10	11	11	12
Gaston	22	25	25	27	29	29	30	27	26	25	27	27	26	35
Gates	4	4											1	
Graham														
Granville	8	11	12	12	8	13	12	14	11	16	16	14	14	15
Greene	5	5	6	6	6	5	5	5	5	6	5	2	5	6
Guilford	54	62	64	65	56	58	59	62	71	66	68	67	72	77
Halifax	10	10	7	6	2	2	11	11	7	15	8	1	7	28
Harnett	16	18	19	15	14	17	17	16	17	15	17	15	14	16
Haywood	10	11	15	13	10	11	13	15	11	11	11	9	9	11
Henderson-Polk	11	15	14	14	17	17	11	14	14	15	15	11	13	15
Hertford	8	9	8	6	2		8	10	4	1	5	10	10	10
Hoke											10	11	10	10
Hyde		5	8	6	6	6	7	7				1	2	1
Iredell-Alexander	18	18	18	17	12	9	9	14	16	9	20	11	11	21
Jackson	2	2					2	3	5	2	5	2	5	5
Johnston	11	15	13	15	19	18	18	19	21	19	22	16	24	22
Jones														
Lee							7	8	7	8	8	6	8	8
Lenoir	12	13	9	12	6	8	9	12	14	15	16	15	17	22
Lincoln	8	8	10	10	10	11	12	13	14	11	9	11	15	16
Macon-Clay	3	4	5				4	4	5	5	4	6	6	6
Madison	11	11	12			10	7	8	11	9	10		11	11
Martin	9	9	13	13	13	12	13	14	14	15	17	12	11	16
McDowell	7		8	4	5	6	6	7	7	7	8	7	6	6
Mecklenburg	37	54	51	57	44	50	63	69	71	74	63	49	97	104
Mitchell	3	4	7	4	5	5	4	2	2	2	1		4	5
Montgomery	6	8	7	9	7	7	8	6	10	9	9	8	6	8
Moore	2	14	10	11	21	21	13	16	15	18	10	15	16	16
Nash						1		19	18	26	27	21	26	25
New Hanover	20	21	23	21	21	22	31	28	33	41	30	29	38	40
Northampton	9	9	8	11	9	1	12	12	11	10	14	11	13	10
Onslow	4	4	4	6	11	10	12	10	8	9	11	7	9	8
Orange *e*	1	1	1	1	1	1	8							
Pamlico	3	4	5	4	4	4	5	5	5	5	5	4	4	5
Pasquotank-Camden-Dare	11	10	10	11	12	12	13	15	15	17	19	16	15	16
Pender				2	2	2	2						1	1
Perquimans												4	3	
Person	7	8	9	9	10	11	11	8	11	13	12		12	10
Pitt	11	9	14	10	10	5	9	5	15	9	14	5	18	24
Polk *f*														

STATUS OF SOCIETY MEMBERSHIP BY COUNTIES—(Continued)

	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920
Randolph	6	9	9	10	8	9	7	12	14	11	13	11	12	13
Richmond	11	11	1	12	1	10	----	10	13	13	14	11	13	12
Robeson	24	24	20	15	22	23	35	24	16	22	16	8	31	35
Rockingham	5	5	1	16	16	16	18	19	17	10	4	15	16	20
Rowan	27	25	23	24	26	24	23	26	22	25	23	22	24	28
Rutherford	16	17	22	23	24	18	19	20	19	21	14	17	18	20
Sampson	9	11	10	11	11	12	12	14	14	18	15	10	11	13
Scotland	8	11	10	11	9	9	11	12	12	12	13	10	9	10
Stanly	9	9	8	11	10	11	11	13	14	9	14	11	11	15
Stokes	5	10	11	9	10	11	7	12	13	12	10	5	5	10
Surry	13	15	15	15	13	14	19	21	19	18	23	24	27	28
Swain	6	6	8	----	----	----	----	----	----	----	6	7	2	3
Transylvania	4	4	1	----	5	5	6	7	6	7	5	----	1	1
Tyrrell *g*	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Union	14	14	14	14	15	16	17	16	16	12	13	15	14	16
Vance	6	8	9	12	11	11	11	10	11	13	10	4	5	11
Wake	42	44	49	53	56	54	41	53	57	62	70	56	81	63
Warren	----	2	----	----	4	5	5	5	8	7	7	6	3	8
Washington-Tyrrell														
Watauga	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Wayne	10	13	10	----	----	16	19	13	7	17	19	18	27	28
Wilkes	7	8	8	11	11	6	9	8	7	6	9	8	10	10
Wilson	12	12	16	17	17	17	17	24	22	22	24	21	25	29
Yadkin	10	11	8	6	6	6	7	7	6	----	----	----	10	2
Yancey	----	4	3	----	----	----	----	----	----	----	----	----	3	3
Totals	865	979	1012	997	996	1036	1133	1220	1221	1228	1271	1087	1306	1497

a See Iredell-Alexander; b see Pasquotank-Camden-Dare; c see Macon-Clay; d see Pasquotank-Camden-Dare; e see Durham-Orange; f see Henderson-Polk; g see Washington-Tyrrell.

HONORARY FELLOWS, MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

Adams, M. R.---Statesville
Alexander, Annie L.---Charlotte
*Alston, B. P.---Epsom
Andereson, Albert ---Raleigh
Anderson, Thos. Eli---Statesville
*Archey, L. M.---Concord
Asbury, F. E.---Ashboro
Attamore, Geo. S.---Stonewall
*Bahnson, H. T.---Winston-Salem
Baker, J. M.---Tarboro
*Barrier, P. A.---Mount Pleasant
Battle, J. T. J.---Greensboro
Battle, Kemp P.---Raleigh
Battle, S. W.---Asheville
Beall, Wm. P.---Greensboro
*Bellamy, W. J. H.---Wilmington
Boddie, N. P.---Durham
Bolton, Mahlon ---Rich Square
*Booth, Samuel D.---Oxford
*Bulluck, D. Wm.---Wilmington
Caldwell, D. G.---Concord
Cheatham, Archibald ---Durham
Clark, G. L.---Clarkton
Council, J. B.---Salisbury
*Croom, J. D.---Maxton
Dalton, Davie N.---Winston-Salem
DeArmon, J. McC.---Charlotte
Denny, Wm. W.---Pink Hill
Dillard, Richard Jr.---Edenton
Dodson, H. H.---Greensboro
*Duffy, Charles ---New Bern
*Duffy, Francis ---New Bern
Edgerton, Jas. L.---Hendersonville
Edwards, G. G.---Hookerton
Faison, I. W.---Charlotte
Faison, Wm. W.---Goldsboro
Fletcher, M. H.---Asheville
Fox, M. F.---Guilford Colloge
Freeman, R. A.---Burlington
Galloway, W. C.---Wilmington
Gibbon, Robert L.---Charlotte
Goodwin, A. W.---Raleigh
*Graham, Joseph ---Charlotte
Graham, Wm. A.---Charlotte
Griffin, J. A.---Clayton

*Deceased

*Hall, Wright ---------- Wilmington
Hargrove, R. H. ---------- Robersonville
Harris, F. R. ---------- Henderson
Harris, I. A. ---------- Alexander, R-2
Haywood, F. J. ---------- Raleigh
Haywood, Hubert ---------- Raleigh
Hicks, Wm. N. ---------- Durham
Hill, L. H. ---------- Germanton
*Hudson, Wm. L. ---------- Dunn
Hughes, F. W. ---------- New Bern
Hunter, L. W. ---------- Charlotte
Irwin, J. R. ---------- Charlotte
Jewett, R. D. ---------- Wilmington
Johnson, N. M. ---------- Durham
Jordan, T. M. ---------- Raleigh
Knight, J. B. H. ---------- Williamston
Knox, A. W. ---------- Raleigh
Leggett, Kenelm ---------- Hobgood
Lewis, H. W. ---------- Jackson
Lewis, R. H. ---------- Raleigh
Long, Benj. L. ---------- Hamilton
*Long, Geo. W. ---------- Graham
Long, J. W. ---------- Greensboro
Love, W. J. ---------- Wilmington
McDonald, A. D. ---------- Wilmington
*McKay, A. M. ---------- Summerville
*McKay, John A. ---------- Buies Creek
*McKee, James ---------- Raleigh
McMillan, Benj. F. ---------- Red Springs
McMillan, J. D. ---------- Edenton
McMillan, J. L. ---------- Red Springs
McMillan, W. D. ---------- Wilmington
McNeill, J. Wm. ---------- Fayetteville
*McNeill, Wm. M. ---------- Buies Creek
Meisenheimer, C. A. ---------- Charlotte
Meisenheimer, Thos. F. ---------- Morven
*Miller, J. F. ---------- Goldsboro
Monroe, W. A. ---------- Sanford
Moore, C. E. ---------- Wilson
Moore, Edwin G. ---------- Elm City
Munroe, J. P. ---------- Charlotte
*Nicholson, J. L. ---------- Richland
Nicholson, Sam T. ---------- Washington
Nobles, Jos. E. ---------- Greenville
Noble, R. J. ---------- Selma
*Pate, Wm. T. ---------- Gibson
Pemberton, Wm. D. ---------- Concord
Perry, M. P. ---------- Macon
Pharr, T. F. ---------- Concord
Pharr, Wm. W. ---------- Charlotte

Picot, L. J.---Littleton
*Prince, D. M.---Laurinburg
Purfoy, G. W.---Asheville
*Register, E. C.---Charlotte
*Ritter, F. W.---Moyock
Royster, W. I.---Raleigh
Schonwald, J. T.---Wilmington
Shaffner, J. F. Jr.---Winston-Salem
Sikes, G. T.---Grissom
Smith, R. A.---Goldsboro
Speight, R. H., Sr.---Whitakers
Stamps, Thos.---Lumber Bidge
*Stevens, J. A.---Clinton
Summerell, E. M.---China Grove
Tayloe, D. T.---Washington
Taylor, I. M.---Morganton
Thomas, G. G.---Wilmington
Trantham, H. T.---Salisbury
Tull, Henry---Kinston
Van Pool, C. M.---Salisbury
Ward, W. H.---Plymouth
Way, J. Howell---Waynesville
Weaver, H. B.---Asheville
Whitaker, R. A.---Kinston
White, J. W.---Wilkesboro
Whitehead, John---Salisbury
*Whitehead, W. H.---Rocky Mount
Whitfield, Wm. C.---Grifton
Whittington, W. P.---Asheville
Williams, J. H.---Asheville
Wilson, A. R.---Greensboro
*Young, R. S.---Concord

HONORARY MEMBERS, MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

*L. McL. Tiffany---Baltimore, Md.
W. W. Keen---Philadelphia, Pa.
J. Allison Hodges---Richmond, Va.
*R. L. Payne---Norfolk, Va.
J. N. McCormack---Bowling Green, Ky.
R. L. Payne, Jr.---Norfolk, Va.
J. L. Ludlow, C.E.---Winston-Salem
Paul V. Anderson---Richmond, Va.
Stuart McGuire---Richmond, Va.
William J. Mayo---Rochester, Minn.
William Seaman Bainbridge---New York, N. Y:
William Sharp---New York, N. Y.

OFFICERS, 1919-1920

President.....Dr. C. V. Reynolds, Asheville
First Vice-President.....Dr. H. D. Walker, Elizabeth City
Second Vice-President.....Dr. F. Stanley Whitaker, Kinston
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OFFICERS, 1920-1921

President.....Dr. Thos. E. Anderson, Statesville
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COUNCILORS, 1919-1922

First District—Dr. B. F. Halsey.....Roper
Second District—Dr. K. P. B. Bonner.....Morehead City
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Fourth District—Dr. E. T. Dickinson.....Wilson
Fifth District—Dr. A. McN. Blair.....Southern Pines
Sixth District—Dr. W. C. Horton.....Raleigh
Seventh District—Dr. L. A. Crowell.....Lincolnton
Eighth District—Dr. J. K. Pepper.....Winston-Salem
Ninth District—Dr. M. R. Adams.....Statesville
Tenth District—Dr. Eug. B. Glenn.....Asheville

CHAIRMEN OF SECTIONS

1921 Session

Public Health and Education.....Dr. Chas. P. Mangum, Kinston, N. C.

Surgery.....Dr. J. T. Burrus, High Point, N. C.

Eye, Ear, Nose and Throat.....Dr. H. H. Briggs, Asheville, N. C.

Gynecology and Obstetrics.....Dr. Moir S. Martin, Mount Airy, N. C.

Pediatrics.....Dr. Yates Faison, Charlotte, N. C.

Practice of Medicine.....Dr. F. M. Hanes, Winston-Salem, N. C.

Chemistry, Materia Medica and Therapeutics—
Dr. Ernest S. Bullock, Wilmington, N. C.

Anatomy, Physiology, Pathology and Bacteriology—
Dr. Paul H. Ringer, Asheville, N. C.

Chairman Committee on Obituaries.....Dr. E. G. Moore, Elm City, N. C.

PROGRAM

GENERAL SESSIONS

TUESDAY, APRIL 20, 9 A. M.

OPENING EXERCISES—FIRST FLOOR, MASONIC TEMPLE

Call to Order:

Dr. J. B. Witherspoon, Chairman, Committee on Arrangements, Charlotte, N. C.

Invocation:

Dr. Bunyan McLeod, Westminster Presbyterian Church, Charlotte, N. C.

Welcome to the City of Charlotte:

Hon. F. R. McNinch, Mayor, Charlotte, N. C.

Welcome to Mecklenburg County:

Hon. Cameron Morrison, Charlotte, N. C.

Welcome from Mecklenburg County Medical Society:

Dr. C. M. Strong, President, Charlotte, N. C.

Response:

Dr. Thompson Fraser, Asheville, N. C.

President's Address:

Dr. C. V. Reynolds, Asheville, N. C.

Report of Committee on Arrangements.

Announcements.

Continue in this room with the Section on Public Health and Education.

TUESDAY, APRIL 20, 2:30 P. M.

THIRD FLOOR, MASONIC TEMPLE

Meeting of House of Delegates.

Subsequent meetings at same place; time fixed by House of Delegates.

TUESDAY, APRIL 20, 8 P. M.

FIRST FLOOR, MASONIC TEMPLE

Pneumoperitoneum as a New Roentgen Diagnostic Procedure (with lantern slides)—Dr. Fred M. Hodges, Richmond, Va.

Report of Obituary Committee—Dr. Arch Cheatham, Chairman, Durham, N. C.; Dr. E. G. Moore, Elm City, N. C.; Dr. F. R. Harris, Henderson, N. C.; Dr. N. D. Bitting, Durham, N. C.; Dr. B. O. Edwards, Asheville, N. C.

WEDNESDAY, APRIL 21, 11:15 A. M.

FIRST FLOOR, MASONIC TEMPLE

Nominations for seven vacancies on the Board of Medical Examiners.

WEDNESDAY, APRIL 21, 12 M.

FIRST FLOOR, MASONIC TEMPLE

Conjoint session of the Medical Society of the State of North Carolina and the North Carolina State Board of Health.

MEMBERS OF THE STATE BOARD OF HEALTH

President, Dr. J. Howell Way, Waynesville, N. C.
Dr. Richard H. Lewis, Raleigh, N. C.
Col. J. L. Ludlow, C.E., Winston-Salem, N. C.
Dr. Thomas E. Anderson, Statesville, N. C.
Dr. Chas. O'H. Laughinghouse, Greenville, N. C.
Dr. F. R. Harris, Henderson, N. C.
Dr. Cyrus Thompson, Jacksonville, N. C.
Dr. A. J. Crowell, Charlotte, N. C.
Dr. E. J. Tucker, Roxboro, N. C.

EXECUTIVE STAFF OF THE STATE BOARD OF HEALTH

Secretary-Treasurer—Dr. W. S. Rankin, Raleigh, N. C.
Director Public Health Education—Mr. R. B. Wilson, Raleigh, N. C.
Director of Bureau of Tuberculosis—Dr. L. B. McBrayer, Sanatorium, N. C.
Director of Bureau of Medical Inspection of Schools—Dr. G. M. Cooper, Raleigh, N. C.
Director of Bureau of Public Health Nursing and Infant Hygiene—Miss Rose M. Ehrenfeld, R. N., Raleigh, N. C.
Deputy State Registrar and Epidemiologist—Dr. F. M. Register, Raleigh, N. C.
Director of Bureau of County Health Work—Dr. K. E. Miller, Raleigh, N. C.
Director of Bureau of Inspection and Sanitary Engineering—Mr. H. E. Miller, Raleigh, N. C.
Director of Bureau of Venereal Diseases—Dr. Millard Knowlton, Raleigh, N. C.
Director of State Laboratory of Hygiene—Dr. C. A. Shore, Raleigh, N. C.

ORDER OF BUSINESS

Report of work accomplished and recommendations.
Discussions.
New Business.
Adjournment.

Wednesday, April 21, 2:30 p. m.
FIRST FLOOR, MASONIC TEMPLE

Balloting for seven members of the Board of Medical Examiners of the State of North Carolina. Vote for seven different names.

Program of the Section on Medicine, as per schedule, will be continued in this room as soon as the ballots are taken up.

Wednesday, April 21, 8 p. m.
FIRST FLOOR, MASONIC TEMPLE

New Conceptions Relative to the Treatment of Malignant Diseases and Some Other Refractory Pathological Conditions (illustrated by lantern slides)—Dr. Wm. L. Clark, Philadelphia, Pa.

State Medicine—Dr. W. S. Rankin, President of the American Public Health Association, Raleigh, N. C.

Thursday, April 22, 11 a. m.
FIRST FLOOR, MASONIC TEMPLE

Report of House of Delegates.
Installation of Officers.
Resolutions.
Adjournment.

SECTION MEETINGS

TUESDAY, APRIL 20, 11 A. M.
FIRST FLOOR, MASONIC TEMPLE

Section on Public Health and Education
Dr. C. C. Hudson, Chairman, Charlotte, N. C.
(City Health Officer, Richmond, Va.)

(This section must be finished by the close of the Tuesday afetrnoon session.)

1. Medical Needs of a Modern Community—Dr. A. McR. Crouch, Wilmington, N. C.
2. An Ideal Nursing Organization—Miss G. E. Reynolds, R. N., Charlotte, N. C.
3. (a) The Importance of a City Tuberculosis Sanatorium; (b) City Abattoir and Meat Inspection—Dr. R. L. Carlton, Winston-Salem, N. C.
4. Remedial Conditions in School Children—Dr. Margery J. Lord, Asheville, N. C.
5. The State Plan for Securing Medical and Dental Care of School Children —Dr. Geo. M. Cooper, Raleigh, N. C.
6. Our Tuberculosis Problems—Dr. B. O. Edwards, Asheville, N. C.
7. Some of the Things Necessary to Banish Tuberculosis from Our Commonwealth—Dr. Jas. E. Brooks, Blowing Rock, N. C.
8. The Proper Education of Tuberculous Patients While in a Sanatorium—Dr. Benj. K. Hays, Oxford, N. C. (National Tuberculosis Association, 381 Fourth Ave., N. Y. C.)
9. Symposium on Venereal Diseases:
   (a) Venereal Diseases a Public Problem—Dr. Millard Knowlton, Raleigh, N. C.
   (b) The State Venereal Disease Campaign—Dr. Millard Knowlton, Raleigh, N. C.
   (c) Ideal Venereal Disease Clinic—Dr. S. Raymond Thompson, Charlotte, N. C.
   (d) The Importance of Laboratory Facilities for Venereal Disease Clinic—Dr. L. C. Todd, Charlotte, N. C.
   (e) Gonorrheal Complications as Related to Infectivity—Dr. A. F. Toole, Asheville, N. C.
   (f) The Diagnosis and Treatment of Syphilis—Dr. C. O. Abernethy, Raleigh, N. C.
   (g) Central Nervous System Syphilis, Its Incidence and Treatment—Dr. Joseph A. Elliott, Charlotte, N. C.
   (h) The Treatment of Gonorrhea in the Female—Drs. Jas. A. Keiger and A. B. Greenwood, Raleigh, N. C.
   (i) The Importance of Proper Treatment in Acute Gonorrhea—Dr. A. McR. Crouch, Wilmington.

Discussion opened by Prof. Udo J. Wile, of University of Michigan (by invitation).

TUESDAY, APRIL 20, 2:30 P. M.

Section on Public Health and Education

FIRST FLOOR, MASONIC TEMPLE

(Continuing)

TUESDAY, APRIL 20, 2:20 P. M.

THIRD FLOOR, MASONIC TEMPLE

Section on Eye, Ear, Nose and Throat

Dr. C. W. Banner, Chairman, Greensboro, N. C.

1. Some Deductions from a Series of 200 Tonsilectomies—Dr. T. W. Davis, Winston-Salem, N. C.
2. Report of 100 Cases of Tonsilectomy Under Local and General Anesthesia—Dr. L. L. Simmons, Greensboro, N. C.
3. Query: What Constitutes Good Tonsil Surgery?—Dr. John W. MacConnell, Davidson, N. C.
4. Title unannounced—Dr. S. Dace McPherson, Durham, N. C.
5. Title unannounced—Dr. J. G. Murphy, Wilmington, N. C.
6. Relation of Public Health Work to the Business Interest of the Specialists of North Carolina—Dr. G. M. Cooper, Raleigh, N. C.
7. Title unannounced—Dr. John Hill Tucker, Charlotte, N. C.
8. The Relative Value of Transillumination and X-ray in Diagnosing Diseases of the Nasal Accessory Sinuses, with Description of the Author's Method of Transilluminating the Maxillary Sinus (lantern slides)—Dr. H. H. Briggs, Asheville, N. C.

WEDNESDAY, APRIL 21, 9 A. M.

THIRD FLOOR, MASONIC TEMPLE

Section on Gynecology and Obstetrics

Dr. J. M. Manning, Chairman, Durham, N. C.

1. Some Phases of Obstetrics—Dr. J. M. Manning, Durham, N. C.
2. Subject unannounced—Dr. Foy Roberson, Durham, N. C.
3. Cesarean Section—Dr. C. A. Woodard, Wilson, N. C.
4. Subject unannounced—Dr. J. L. Nicholson, Washington, N. C.

No section meetings after 11:15 a. m. today (Wednesday) as nominations for members of Board of Medical Examiners will be called at this hour.

WEDNESDAY, APRIL 21, 9 A. M.

THIRD FLOOR, MASONIC TEMPLE

Section on Pediatrics

Dr. J. Buren Sidbury, Chairman, Wilmington, N. C.

1. The Importance of the Early Recognition of Intra and Extra-dural Hemorrhage in the New-Born—Dr. J. Buren Sidbury, Wilmington, N. C.

2. Focal Hemorrhagic Encephalitis: Report of a Case with Transfusion—Dr. A. S. Root, Raleigh, N. C.
3. Intubation of the Larynx for Membranous Croup—Dr. L. T. Royster, Norfolk, Va.
4. Acidosis—Dr. L. W. Elias, Asheville, N. C.
5. Infection of the New-Born—Dr. Yates W. Faison, Charlotte, N. C.
6. Simplified Infant Feeding—Dr. Frank Howard Richardson, Brooklyn, N. Y.
7. A Discussion of the Use of Purgatives in Infants—Dr. D. L. Smith, Saluda, N. C.
8. Diabetes Mellitis in Childhood—Dr. R. M. Pollitzer, Charleston, S. C.
9. Skin Tests with Foreign Proteins—Dr. Horace M. Baker, Lumberton, N. C.

No section meetings after 11:15 today (Wednesday), as nominations for members of Board of Medical Examiners will be called at this hour.

Wednesday, April 21, 9 a. m.

FIRST FLOOR, MASONIC TEMPLE

Section on Practice of Medicine

Dr. Hubert B. Haywood, Jr., Chairman, Raleigh, N. C.

(This section will adjourn promptly at 11:15 a. m. for the nomination of seven members of the Board of Medical Examiners. It will reconvene in the same room at 2:40 p. m. immediately after the ballots are taken up. This section must be finished at the Wednesday afternoon session.)

1. Specifics in Medicine—Dr. Frederic M. Hanes, Winston-Salem, N. C.
2. A Study of Different Types of Bright's Disease: The Importance of Their Early Recognition—Dr. Wm. deB. MacNider, Chapel Hill, N. C.
3. Pathologic and Lantern Demonstration of the Influenza and Influenza-Pneumonia Lung—Dr. Jas. B. Bullitt, Chapel Hill, N. C.
4. X-ray Findings in the Lung Following Influenza, Tuberculous and Otherwise—Dr. Robert P. Noble, Raleigh, N. C.
5. Hyperthyroidism and Tuberculosis: Studies on the Use of the Goetsch Test—Dr. R. A. McBrayer, Sanatorium, N. C.
6. Essential Hypertension—Dr. R. F. Leinbach, Charlotte, N. C.
7. Syphilis vs. Rheumatism and Neurasthenia, with Report of Illustrative Cases—Dr. J. Allison Hodges, Richmond, Va.
8. Mechanism of Convulsive Movements of the Face and the Manner of Their Removal—Dr. Tom A. Williams, Washington, D. C.
9. Anemia: Report of a Case Treated by Transfusions—Dr. K. C. Moore, Wilson, N. C.
10. Arterial Tension and Its Clinical Manifestations—Dr. Chas. H. Pette, Warrenton, N. C.
11. The Significance of Abnormal Blood Pressure—Dr. J. T. J. Battle, Greensboro, N. C.

12. Some Facts, Old and New, Concerning the Pulse and Heart—Dr. Hubert B. Haywood, Raleigh, N. C.
13. Toxic Arthralgia, with the Teeth, Tonsils and Stomach as Etiologic Factors—Dr. O. Edwin Finch, Apex, N. C.
14. Symptomatology of Typhoid Fever—Dr. P. R. Hardee, Stem, N. C.
15. Eventration of the Diaphragm—Dr. Wm. Allan, Charlotte, N. C.
16. Report of a Headache Cured—Dr. John H. Tucker, Charlotte, N. C.
17. Syringomyelia, with Report of a Typical Case—Drs. J. P. Munroe and A. A. Barron, Charlotte, N. C.

THURSDAY, APRIL 22, 9 A. M.

FIRST FLOOR, MASONIC TEMPLE

Section on Chemistry, Materia Medica and Therapeutics

Dr. Chas. S. Mangum, Chairman, Chapel Hill, N. C.

1. Food Values from the Standpoint of the Vitamine Content—Prof. W. A. Withers, Department of Chemistry, North Carolina State College, Raleigh, N. C.
2. The Problem of Food Values—Dr. W. P. Horton, North Wilkesboro, N. C.
3. Different Forms of Food Adulteration—Mr. W. M. Allen, Food and Oil Chemist, State Department of Agriculture, Raleigh, N. C.
4. The Chemistry of the Blood in Nephritis—Dr. W. M. Copridge, Durham, N. C.
5. Treatment of Amoebic Infections—Dr. Wm. Allan, Charlotte, N. C.
6. The Modern Therapeutic Value of Digitalis—Dr. Jos. A. Speed, Durham, N. C.
7. X-ray and Radium Treatment of Skin Affections—Dr. W. D. James, Hamlet, N. C.

Section on Anatomy, Physiology, Pathology and Bacteriology

Dr. H. P. Barrett, Chairman, Charlotte, N. C.

Illness prevented Dr. Barrett from taking care of the program for his section.

Tuesday, April 20, 11 a. m.

THIRD FLOOR, MASONIC TEMPLE

Section on Surgery

Dr. E. B. Glenn, Chairman, Asheville, N. C.

(This section must be finished by the close of the Tuesday afternoon session).

1. Acute Pancreatis, Suggesting Acute Intestinal Obstruction—Dr. E. B. Glenn, Asheville, N. C.
2. Saving Suppurating Wounds—Dr. H. A. Royster, Raleigh, N. C.
3. Goiter: Observations Drawn from 216 Cases (lantern slides)—Dr. Addison G. Bernizer, Charlotte, N. C.
4. Imbrication Operation for Inguinal Hernia; 200 Cases Operated; Steps in Operation (lantern slides)—Dr. J. T. Burrus, High Point, N. C.
5. Some Difficulties in Gall-Bladder Surgery—Dr. J. W. Tankersley, Greensboro, N. C.
6. Prostate Toxemia—Dr. Albert D. Parrott, Kinston, N. C.
7. Management of Carcinoma of the Stomach—Dr. T. M. West, Fayetteville, N. C.
8. The Treatment of Infected Bone Cavities—Drs. D. W. and Ernest Bullock, Wilmington, N. C.
9. Closure of the Abdominal Wall—Dr. Henry F. Long, Statesville, N. C.
10. Hypertrophic Stenosis of the Pylorus—Dr. E. T. Dickinson, Wilson, N. C.
11. The End Results of 100 Cases of Cancer of Uterus—Dr. J. A. Williams, Greensboro, N. C.
12. Subphrenic Abscess—Dr. G. W. Pressley, Charlotte, N. C.
13. Ascariasis as a Surgical Complication—Dr. Henry Norris, Rutherfordton, N. C.
14. The Surgeon and Roentgenology (lantern slides)—Dr. Robert H. Lafferty, Charlotte, N. C.
15. A Troublesome Complication of Gonorrhea, Its Treatment—Dr. Hamilton W. McKay, Charlotte, N. C.
16. Treatment of Skull Injuries by the Ordinary Surgeon—Dr. C. M. Strong, Charlotte, N. C.
17. Flat Feet—Dr. Alonzo Myers, Charlotte, N. C.
18. Drainage—Dr. W. O. Spencer, Winston-Salem, N. C.

Thesday, April 20, 2:30 p. m.

THIRD FLOOR, MASONIC TEMPLE

Section on Surgery

(Continuing)

FOREWORD

At the last session of the Medical Society of the State of North Carolina at Charlotte, April 20-22, it was understood that Dr. Hays would return to the State and take up his work here, including the Secretaryship of this Society, within the two weeks following the meeting. Instead, however, Dr. Hays took up work with the United States Public Health Service and has not as yet returned to the State. Therefore, it became my duty to continue the work as Acting Secretary-Treasurer and I am responsible for this volume of the Transactions. The difficulties in getting out this volume have been many and we crave your indulgence for any errors or omissions.

Respectfully yours,

L. B. McBrayer,
Acting Secretary-Treasurer.

TRANSACTIONS
of the
Sixty-Seventh Annual Session of the Medical Society of the State of North Carolina

OPENING EXERCISES

TUESDAY MORNING, APRIL 20, 1920.

Meeting called to order by Dr. J. B. Witherspoon, Chairman of Committee of Arrangements, Charlotte, N. C. On the platform were seated all the Ex-Presidents and Guests of Honor.

"It is my privilege and pleasure to call together the 67th Annual Meeting of the Medical Society of North Carolina. It is fit and proper that we should first have the Divine Blessing"

INVOCATION

DR. BUNYAN MCLEOD, WESTMINISTER PRESBYTERIAN CHURCH CHARLOTTE:

"Almighty God who has planted the day star in the heavens and scattered the night, restored unto us this morning thy heavenly light, all things make us think of Thee. The radiant sunshine, the rapture of the birds, and above all the thrill that comes into our souls from far off days. Lift upon us thy light that we may see light, lighten every doubt and fear, lighten every cross and care, lighten every path and duty. We pray that Thou wilt bless this Medical Society and every physician that is identified with same.

We offer thanks for the splendid service they render in ministering at our bed side, in relieving pain, in restoring back to health and strength those that have been at the bed-side of death. We would think now of the doctrine that will never be forgotten in our minds; serving, toiling, sayings and doings in the old country, and better still is impressed our God who is keeping his reward for such men. May every physician here feel that the memory and gratitude to those to whom they minister is far greater than they could ever anticipate. We welcome these men and pray that God will give them great deliberation.

We ask this in the name of Him who came in this world not to be ministered unto but to minister. AMEN.

WELCOME TO THE CITY OF CHARLOTTE

HON. F. R. MCNINCH, MAYOR, CHARLOTTE, N. C.

Mr. President and Gentlemen of the N. C. Medical Association:

It's a very sincere pleasure to welcome you on behalf of the people of Charlotte to our city. Charlotte regards it as a distinct honor that your noble profession should have selected this place as the place of your gathering. We are always glad to have meet with us any splendid body of men but there is a peculiar pleasure and honor to have meet within our gates the Medical Profession of North Carolina.

I believe I am perfectly sincere when I say that I regard your profession as the one that has contributed more greatly to the condition of mankind and to relieving of conditions that tend towards suffering and distress, than any other secular organization. Applause.

It has been my good fortune to get a closer view of the Medical profession locally. It is a pleasure for me to testify to the devotion of the local physicians, to the cause of public good. I know of no class of men who have devoted themselves more to the community's good than the local physicians. Applause.

I recall very vividly the distressing times here during the two epidemics of Flu, particularly the first. To me it was amazing that human beings could so devote themselves to the relieving of suffering. Night and day many of them devoted themselves in a perfectly beautiful manner to the relieving of suffering in their community. Charlotte shall never cease to be grateful or cease to acknowledge its gratitude to the Medical Profession. We remember, of course, the grand work done by our profession during that great war. Many lives were snatched from the very border land of the other world by the skill and devotion of your profession.

Your highest endeavor and your greatest zeal and energy is directed towards efforts that would seem at least, to tend towards making your profession useful. I refer to preventative medicines. Marvelous things have been accomplished in the last ten years by your profession. Every time one has a prevention for contraction of a disease, there is one patient less for the doctors.

The greatest part of your accomplishment in my judgment has been along the lines of preventative medicines. We not only appreciate the result, but we appreciate the motive which would prompt a body of men to set themselves about for the discovery and removal of a cause which would take away from their practice. I believe that the highest mark of your profession, is not treating the disease, but it is in discovering and telling people in advance how they may escape that disease. That physician in that community who best serves his people, he is the most useful citizen in the community, save the Minister of the Gospel. I believe that the physician ought to, and I know that they do here, believe in the advancement of the community in medicine—in the teaching of the public A. B. and C. of health, in order that they may avoid the contraction of diseases.

In Charlotte we have taken some interest recently in Public Health work. I don't desire to reflect anything on the past administration—all of us do the best we can. Charlotte has made an effort to build up a public health department, and I believe we now have a very efficient health department. This is due to your profession, the things it has discovered and imparted to the public. We are very grateful to you—therefore it is our honor in having you with us this morning. I may no longer truthfully welcome you to the largest city in North Carolina—may I not without undue modesty suggest that the little bit lacking in number is more than made up in quality. It has been three or four months since the census was taken and we are certain since that time we have grown more.

We hope your stay here will be pleasant and profitable to you, as we are perfectly certain it will be both to us.

WELCOME TO MECKLENBURG COUNTY

HON. CAMERON MORRISON, CHARLOTTE, N .C.

On behalf of the largest County in North Carolina—Mecklenburg—rich in historic interest; rich in all material things; progressive in every aspect of North Carolina life, I welcome you to the County of Mecklenburg.

I hope that you will enjoy your stay in our city and I am sure you could not come among a people where the Doctor is more loved than in the intelligent county of Mecklenburg. A great many of our people love the Ministers; not quite as they should, but all the people of Mecklenburg County, Saint and Sinner, love the Doctor. You have more friends than any other like number of men who live in our commonwealth. You have more friends than any other like number of men, because you have ministered to more men in trouble and distress than any other like number of men in North Carolina, and it is with pride and pleasure that I welcome you to our county and assure you that all we have is at your disposal.

This done, I want you to let me trespass for a moment to congratulate you upon one of the many opportunities which you have to serve humanity and North Carolina. It is for your profession to say whether or not the people of North Carolina should be protected in the future by having all the knowledge of preventative medicines which this enlightened age carries through you, thrown around the home-life of the State. In this important aspect of our future the Physicians of North Carolina are the Statesmen of North Carolina and there is no greater duty before North Carolina in the future than to see to it that all the knowledge of preventative medicine which an enlightened world possesses is thrown around the home life of the people of this State. This duty is the highest duty of Statesmenship and yet it cannot be performed except under your guidance, advice and direction. Applause.

Of all the fools I come in contact with, and they are numerous, of course, who aggravate me, it is the ignoramus who wants to tell the Doctors of North Carolina how to protect health and life in the State. We want the government in North Carolina, which holds itself absolutely subservient to the advice and skill and wisdom of your great profession. We must have the best possible Health Administration in North Carolina and in every community in North Carolina, and the Doctors must organize and guide the people to see to it that fewer people are sick and suffer and die in North Carolina in the future than in the past.

We have the reactionary and ignorant ones to deal with, but under the influence of your profession North Carolina can be blessed by having thrown around the life of every man, woman and child in North Carolina all the knowledge of the preventative medicine which your great profession has worked out for the happiness and protection of humanity. The people of Mecklenburg County recognize your profession as the greatest servant of humanity, save the man of God. Nearly every preacher is a man of God. I never saw a Doctor in my life who was not a gentleman. I have seen some that had some sins alright, you know they are not all sanctified. I never saw many who were not gentlemen, at least in a practical sense, a Christian. The influence of the Doctors in North Carolina, is next to that

of the Ministers, and all the people of Mecklenburg County and North Carolina are not unmindful of your courageous lives. I can conceive of a man in the battle-field with the music cheering him on, standing in the midst of thousands, with all the world and ages to come looking on, but when I think of a student of medicine or a Doctor off in the laboratory, in the sick-room, in the midst of disease and death battling with these mysterious germs, every day living in the midst of death and danger, I believe you are braver than any soldier on the battle field.

We never think of anything killing a doctor. We forget "I am scared of germs." The doctor goes from one room of germs to another as fast as his poor tired body can carry him for humanity's sake every day of his life. I believe that as the world becomes enlightened; as education is spread among the people, they are appreciative of these great enlightened scientific men who worked out and discovered the mysteries to protect the human life from suffering; these men are becoming appreciative more and more as time goes on.

We may think of the Imperial German—Wilhelm—the greatest one of misery and warfare, Napoleon the mighty, Foch the recent hero and military savior of the world are both appreciated but the day will come when Pasteur, the silent student, who worked in the mysteries of chemistry has already saved more human lives than these two men ever destroyed, their work is ended, but the work of Pasteur will go on, saving and protecting life, until God winds it all up.

In the future it will be appreciated more by the masses, because the masses will become more intelligent. I want to urge every Doctor who hears me to make himself a leader in his community, an organizer in his community so that North Carolina and every community in it shall cease the picaunish policy and disregard to the expenditure of money for the protection of life and health of the people of North Carolina. We alone can do this. I congratulate you upon the great opportunity which you have to render this service to the community. We want an Administration in North Carolina that recognizes that the protection of health of our people is the highest type of politics and Statesmanship. I hope if it is ever my good fortune to be Governor of North Carolina (Applause) that the Doctors before me in this State will consider me their servant and their agent, as well as their instrument—that I may win the proud title in the history of North Carolina—*The Health Governor of North Carolina.*

WELCOME FROM MECKLENBURG COUNTY MEDICAL SOCIETY

Dr. C. M. Strong, Pres., Charlotte, N. C.

Members of the North Carolina Medical Society, Ladies and Gentlemen:

The tide of time with its ebb and flow has brought the medicine men of North Carolina to our city again. Eleven years ago we had the honor of having you with us, since then the personnel has changed, many new faces greet us with the blooming hopefulness of the future and also many of the old guard are missing, and many here are going down the hill. Hence occasions like this bring mingled feelings of gladness and sorrow, but we are always to remember that the sweets of life are tinged with the wormwood

and the gall and however perfect the day, though its sunset radiates a beauty not of earth, is followed by the dark.

All over North Carolina today there is medical darkness on account of your absence from home while here we are basking in the effulgency of an "Esculapian Sun." We congratulate ourselves on having you medical men with us also your clientele at home, they will have a chance to get well, a rest from ills and pills and doctor's bills, what doctors are made of. Then you doctors will, for a short time, get away from coughs and moans, aches and groans and all such things that patients are made of. And again you have a chance to get off your accumulated jokes and rich and rare are the jokes of the old doctor. A doctor's jokes always goes for he usually sees into and hears everything at the drug store or country store and blacksmith shop or, as they are latterly called garages and smaller the shop the larger the sign like some doctors I know.

Don't fail to tell how many cases of flu pneumonia you had without a single death and this does not mean that you will not have a "pleural death." How many young Americans you have ushered into this Bolshevic world in one night, ten miles apart. How many appendix and tonsils removed which were not diseased. What make of a Ford car you are driving, what specialty you are going into and city to locate in. Don't forget Charlotte. We have a few vacancies left and are inventing new specialties every day. Talk at length of the high cost of living and how you are going to meet it charging the same old fees. By the way have you ordered your overalls, they are going up every day and will soon be too high to buy. Order now—perhaps you can get a pair by the first of October, not up to specifications perhaps and may be striped instead of blue and you must make a deposit of $25.00 down the balance can be paid monthly through the Morris Plan bank. How you are going to take a rest every year and never do it because Mrs. Smith is expecting, and you wear yourself out and soon your meeting days are over.

From the Sand Dunes of the Atlantic, up to the Fertile Lowland, the industrial Piedmont and the Land of the Sky you come, like the Mohammedan to his Mecca's Shrine for inspiration or the Hindu to the Sacred Ganges to wash his sins away. Where will you find a greater inspiration than at a meeting of the North Carolina Medical Society or where will you find purer water than the sacred Catawba, brewed as it is in natures Grand Distillery of the Blue Ridge. However, it has been known to be contaminated with a little corn. Some of the older members can recall that at a former meeting of this society it was all corn. If, therefore, you find a single grain in it now please hand it to the Historian as it is more valuable than the diamond.

As President of the Mecklenburg County Medical Society, of which we are justly proud, none better and few equal, we bid you welcome, ask you to visit our five hospitals overflowing with patients and impatience, our Mayonett Clinics of which we have a few and thus is the trend of medicine. Our Medical Library full of lore and dust—in fact everything medical except our patients and only talk to them of the weather, as they have some medical secrets about us doctors which we do not care to have divulged. Besides they think a visiting doctor knows more than a local one, a pity 'tis often true, and we want to avoid any focal infections.

As North Carolina doctors we welcome you Fellow North Carolinians and all others wherever you are from, also especially our Suffragette Allies. Would here say if there is anything characteristic of North Carolinians it is their individualism you have to show him, not once like the Missourian, but many times and besides we have no big cities to hog it over us but many good towns. Therefore our doctors are all city and country doctors and are on an equality hence our coming together is more like a big family reunion. And at this great family reunion of Tar Heel Doctors throw off all reserve, sit around old Mother Mecklenburg's Big fireplace, smoke plug tobacco and cob pipe, expectorate in the fire, tell all the yarns you want, drink a little of the corn, if you can find it and no Patriotic Tar Heel will drink any other kind, speak out in meeting with no one to molest or make you afraid. After you have received your inspiration and your medical sins are washed away may you leave here invigorated in body and mind.

Would conclude with the admonition and blessing of the sweet singer of Israel of the long ago; when he touched his harp's strings and sang his first song and said:

"How blessed and happy is the man
Who walketh not astray
In paths of ungodly men
Nor stands in sinners way
You shall be like a tree
Set by the river's side
Whose leaves and fruit
Shall ever green abide
And all you do shall prosper well.
The wicked are not so
But like chaff before the wind
Are driven to and fro
And may goodness and mercy all your life
Always follow thee
And in "God's House" forever more
Your dwelling place shall be."

RESPONSE

DR. THOMPSON FRASER, ASHEVILLE, N. C.

"It is nice to be told that we are welcome, even though we feel that we are, but it is especially nice to be welcomed to Charlotte. I feel that our stay here will be profitable to us all. I think these medical meetings are always a sort of inspiration.

"I think we have an opportunity to absorb some of what we may call the Charlotte spirit, the spirit which has made Charlotte the Queen City of the Carolinas. She stands before us as an object lesson, civic pride and 100 percent American. I don't need to tell you that Charlotte leads all America as the Textile Center, as second Auto. center in the South, and is fast pushing Atlanta for its place. I am told that its Hospital accommodation has increased one thousand percent in the last 15 years. We know that it is the spirit and energy of Charlotte physicians that has made its Board

of Health what it is. I think you will agree with me that we have an opportunity to profit by what we have seen and to carry back some of these ideas to our home towns. It is a great pleasure to be with you, and in behalf of the North Carolina Medical Association, I wish to thank the speakers for the courtesy of inviting us here and for their hospitality during our stay here."

MEDICAL LEGISLATION

ANNUAL ADDRESS OF THE PRESIDENT

C. V. Reynolds, M. D., Asheville, N. C.

INTRODUCTION

In appearing before you this morning as President of the Medical Society of the State of North Carolina, and before reading the message, please let me say that it is with inestimable appreciation that I serve as your presiding officer and the honor is deemed the greater in that it is the highest that the State has to offer.

We trust that you are pleased with the scientific program and just here allow me to express publicly my personal thanks to Dr. L. B. McBrayer for his wise council, and persistent effort in our behalf. It is largely due to him, and the chairman of the various sections, that we have such an interesting program.

In searching for a subject to present to you, I could find nothing of unusual interest in my possession, so it occurred to me that an economic problem of such vast importance to the Medical Profession as "Medical Legislation" would be timely, appropriate and, I trust, interesting.

Problem

			Rate	Per
Typhoid fever caused	10,113	deaths in 1917	13.4	100,000
Malaria fever caused	2,387	deaths in 1917	3.2	100,000
Diph. Croup caused	12,453	deaths in 1917	16.5	100,000
Pneumonia caused	12,821	deaths in 1917	149.8	100,000
Diarrhea (under 2 yrs.) caused	48,231	deaths in 1917	64.0	100,000
	186,005			
Tuberculosis caused	110,203	deaths in 1917	146.4	100,000
Cancer caused	61,429	deaths in 1917	81.6	100,000
Infants (under 1 yr.) caused	171,204	—20% of deaths under 5 yrs. of age.		
	342,656	deaths in 1917.		

Injuries at birth 3.2 in 1910—but 4.6 in 1917.

Premature births increase 17.5 in 1910 to 21.1 in 1917.

What is the cause? It certainly is food for thought.

There were in hospitals for the insane and blind 55,435 due to syphilis and gonorrhea.

There were 292,519 deaths from diseases for which gonorrhea and syphilis were greatly responsible.

There were 1,068,932 deaths in the registration area in 1917—one-half of which are preventable.

Then may I ask in the beginning—have we a problem?

With this situation before us—with the recent evidence that 35% of our prime manhood physically defective, with the general citizen of our country enthusiastically crying for a general re-adjustment, do you think for one moment that the real and fundamental secret to the success of human endeavor will, or should be, overlooked?

Medicine, as an applied science, has through individual, rather than a collective effort, made marvelous advances through her various avenues of research; this reward of merit through individual attainment should not be lost.

Then it behooves us for the sake of self preservation, if not for the higher motive, the preservation of humanity, to have a strong committee to watch, plan and outline, for those who are endeavoring to pass Medical Legislation, that we may guide their efforts in the proper way. Never before did we need, as we do now, intelligent leadership.

THE DOCTOR

The Doctor—"God bless him"—for the people have never paid him, he has worked harder, longer, suffered more, endured more, and received less than any other professional man. But this sacrifice has been made in a field of curative medicine—useful, but growing less important as preventative measures develop.

No words of appreciation can begin to give justifiable praise to the doctor, for his willingness to serve humanity, his forgetfulness of self, and his duty to his family, when facing the rain, the snow, the hail, the wind and the heat—no road too long, no hill too steep, no phobia of contagion too great to prevent his rendering a service to his fellowman. For remuneration?—yes—but his altruism is, and, I hope, will ever be unquestioned.

Yet, may I ask, have we not neglected our greatest asset to man in awaiting his call for aid and then attempting a cure, rather than anticipating his ills and preventing his calls. We advise how to *get* well where we should advise how to *keep* well.

We are constantly discussing our problems, making known our mistakes, as well as our accomplishments; we have forged ahead and have done much, yet we know and the public knows that with our present method we are not by one-half, doing what could be done.

Through various agencies, we can do most effective work in preventing one-half of the present injuries and illnesses. The trend of the public mind (let this mind be in the control of the philanthropist, the socialist, the republican, the democrat, the mugwamp, the braying mule or the politician) is toward some type of socialistic medicine. Our apathy, indifference, or our somnolence toward the passing of Workman's Compensation laws has caused us, as well as those whom it was intended to serve, to be led into unsound, unprofitable, and poorly administrated medical practices.

Experience has taught us something and we should awaken, ere it is too late, and realize that certain fundamental changes are to be made, and that this is necessary to society, before we are embarrassed by having our duties poorly done by incompetents.

Our already accumulated knowledge, if awakened and put into active service, can reduce sickness and accident one-half. The philanthropists, the politicians and the people at large have this interesting knowledge—made possible for them by us, and given to them by our press. Do you think for one moment that they are going to sit idly by and see this vast waste of human life?

Our individual problems may cause us to sit idly by, forgetful of, or, with indifference to, the greater problems of the community, the state, or the United States health program and we will suffer the consequences of the inactive, thoughtless, indifferent citizen, and suffer in consequence of our inactiveness.

The physician is still an individual, and deals with his patient as an individual, failing to recognize that community interest must and should be conserved, even at a loss to the individual for the good of many.

The doctor is not mercenary—neither is he pessimistic—nor would I call him an optimist. He is schooled and trained to think for the preservation of human life, for the betterment of the physical being, realizing that health is the foundation of happiness, prosperity, and independence, and that sickness leads to inefficiency, which produces misery, poverity, degradation, crime and vice.

In colonial days, under pioneer conditions, the first requirements in establishing a village, it matters not how small, was the erection of a church, a school house, and the securing of a physician—those were the recognized essentials for the development and care of the moral, mental and physical well being.

From the small church, the little red school house and the willing physician, there has grown the glorious cathedral, the advanced facilities for educational purposes in our public and private schools, and state universities—the modern physician, fresh from colleges of highest advantages, the experienced surgeon, clinician and bacteriologist.

Vast and wonderful opportunities are most universally offered, yet collectively we have not prospered and made what we should out of our opportunities.

In the war census there was found one-fourth illiterate—an utterly inadequate number of skilled mechanics and technicians, and one-third of our young manhood physically unfit.

Of late we have come to realize many of our short comings and is it not high time for us to set about to prevent the preventable, to correct the correctable and to cure the curable?

This is an age of reconstruction, and a readjustment of conditions there will and must be. This, it seems, is the time, and the tide is growing stronger day by day. As time and tide wait for no man, it behooves us to step in and guide or mold our future before some well meaning philanthropist guides or molds it for us.

There are numerous ways and not many definite plans already proposed, and many more will be forth coming—none of which will please us all.

Then the first step in the solution of such a vital question is to select a special committee to analyze the various suggestions and pick out the fundamental element—this committee working in conjunction with a similar committee from the American Medical Association, the Public Health Association, the State Board of Health, and the Southern Medical Association, to report back to this Society their conclusions for ratification, the adopting of which should and I believe would bring about a co-operative effort to work for a common objective.

INSURANCE

When industries were small and the employer did his daily work with the employee, and was the guiding brain, there was a friendly bond between the two—strife, jealousy and the feeling of the general in-equality of it all was forgotten through this relationship.

As industry has grown, machinery has become the guiding brain of the former employer, and the personal equation has disappeared. The employee began to realize that he was an integral part of the industrial machinery, and that to the injured or those suffering from illness, the employer should make reparation just as he did in any damage done to the mechanical devices.

The employer removed from this personal equation did not so consider it. Common law was appealed to by the employee—more justice was not received, so in recent years the barriers protecting the employer were broken down, when the European conception was adopted—replacing the common law system by a law, based "not on fault, but on the fact of injury resulting from accident in the course of employment."

The method adopted was insurance by many for the benefit of the injured.

There are various forms of insurance adopted; the lodge insurance, fraternal insurance, social insurance, Vol. Compulsary Accident and Sickness Insurance, Mutual Insurance, State Insurance, Workman's Compensation laws, etc., all of which have their advocates and their bitter opponents. This kind of self perservation on the part of the employer and employee is taking on vast proportions in this country, and it means a new conception of law and order regarding the proper placing of the responsibility of the ill and injured. This new social and economic condition that is upon us, and growing in vast proportions daily, is of serious moment, especially to the Medical profession. The present lodge and contract practice has received a well deserved censure from us, and has merited a greater condemnation than it has received at our hands.

The form of insurance in about one-half of the large countries in Europe is Compulsory sickness insurance, adopted in Germany in 1884, Austria, 1887, Report AMA Hungary, 1891, Norway, 1894, Finland 1895, G. B. 1807, Italy and France 1898, Spain 1900.

U. S. for Federal employees only 1908. About 26 states of the American union 1911-1913.

ARGUMENTS

FOR INSURANCE

Real or imaginary conditions in the U. S. have caused many welfare and social reformers to organize the American Association for Health Insurance evolved from this Association as the best method for social betterment.

Practically every one who has considered the matter, recognizes that the distribution of the loss from sickness by means of insurance is desirable.

Compulsory Insurance is necessary because under voluntary insurance those who need it most are the ones who remain uninsured (lack of funds).

Compulsory insurance will stimulate the needed campaign for the prevention of illness.

Life expectancy increases in C. between the ages of 18-60 (12 years).

Reduce the time lost by the wage earner.

Malingering would be negligable in Comp. Ins.

Disease cause of poverty.

Will solace the abuse of Medical Charity. Individual will receive less, but the physician as a whole will receive more per capita (AMA).

AGAINST INSURANCE

Social evils do exist and some remedy or remedies should be sought, but while organized labor, the employer and the employed and the physician are opposed and the ones most vitally interested are opposed to compulsory insurance. Why is it best?

No new health insurance legislation should be enacted before we entirely rectify the unfairness of the present compensation law.

The present system whereby the poor are treated by the most efficient medical men is far better than medical service furnished by physicians which H. Ins. obtains.

Untrue—the State being already taxed through sickness, insurance would not be available.

M. M. Dawson says that this is not true—the increase was only 1.6 years have non-insured countries a better showing.

This assertion contradicted by experience. Germany and Austria 6-19 to 9-19, increase A-16.4 increase.

In G. malingering and pension hysteria has become a regular epidemic.

Poverty cause of disease.

Will extend Medical charity abuse —unemployed casually employed. Self-employed—poorly paid in insurance act.

Decrease medical efficiency. Destroys incentive for medical research and individual effort. Competent and incompetent get same pay. Destroys personal relationship between patient and M. D.

To lessen human waste through preventable accidents, occupational disease, in fact, every preventable that will prevent, is an economical essential to material business, as it is to the human agents that guide it.

Notwithstanding the various pros and cons—we have under the old scheme 38,000,000 employed in the U. S. and of these 1,385,856 are ill at any given time—estimating nine days individual loss, gives a grand total of 12,022,104 sick days in the year.

Now one-half of these illnesses are preventable. To say nothing of greater and accumulative loss due to a lessened future earning power on account of illness and the sequel of such illness. It is not an economic waste to allow it to proceed.

The monetary loss, and the number of sick are important factors and the State—the employer and the employees are beginning to consider them as

serious problems to be reckoned with. They now realize that the length of illness and the amount of medical aid is not the object sought, but rather the complete restoration of the individual to useful citizenship, which elevates the common standard of American physical fitness. Adequate care, not based on time or money, will be, and should be, insisted upon.

Anything and everything that tends towards raising the general health standards through preventive or curative measures should deserve serious consideration, but our ambition to better conditions should not force anything upon us hastily. Wise and judicious council should be sought, prompt action should be taken, lest we inherit the avoidable mistake of others.

The Insurance acts in the foreign countries and in this country are most ambitious in an effort to raise the physical standard of a certain class of laborers—an immense piece of P. H. legislation, based upon certain principles of Democracy for the benefit of all the people, acceptable by the people, and for the best interest of the people, the State, the employer and the employee, each realizing their relative responsibility, will pay a percentage of the cost, thus distributing the expense.

Under insurance, the annual death rates have been lower in infancy, and between the ages of 5 to 19. Between the ages of 20 to 39 not steady—17.7 to 16. Between the ages of 40 to 59 there is a decided increase, 17.6 to 20.8.

If the insurance act will lessen morbidity, mortality and poverty, it will increase health, happiness, efficiency and prosperity of the insured. Then by all means, let's have it, but we must remember that the fundamental factor lies in the intelligence and the integrity of the Medical profession, and its ability to administer intelligently, adequately and honestly.

There are many objectionable and serious handicaps to the successful administration of Health Insurance as handled in the old country, such as lowering the standard of the medical profession—the lack of individual inspiration to excel, lack of remuneration for services rendered, etc. All of these evils should and must be remedied before Health Insurance is endorsed by the Medical profession. It is your duty and my duty to guide any legislation, either state or national, that is of such vital importance to the people.

STATE MEDICINE

The greatest asset in any state lies in the efficiency of the moral, mental and physical development of her womanhood and manhood.

It is my opinion that health is the basic element of human efficiency, and upon it stands or falls the power or perfectedness of the state or nation. The state is constantly and without objection, looking after and controlling her inferior assets, why then is it not to her greater advantage to seek to raise the standard of, and to aid in protecting her greatest asset, the human family.

There is not a voice raised against the state's efforts towards the prevention of disease, but there has not been a sufficient effort on the part of the physicians in the prevention of disease, nor in their effort to aid the state in securing sufficient funds to advance the work, nor pay adequate salaries to the doctors for services rendered. When, through the activities of the State

Health Board, there are found to be curables, uncured, operatables, unoperated upon, defects unremedied, focal infections, still infecting—it is high time for some agency to be set in motion to correct this existing block in her progress.

Again, nothing is said when these curables or operatables are among the indigent—the poorest human asset the state possesses, but a storm of indignation is immediately raised when the state begins to protect her greatest asset, the better element of society.

Illness, injury and deformity, the great factors in inefficiency, suffering, sorrow, poverty, vice and crime are not limited entirely to the indigent, but occur throughout the entire population.

The surgeon, the internist, the pediatrician, the dentist, etc., have had the indigent, the ne'er-do-well and the well to do under their professional care and guidance for years, and those who sought advice have received much, but by a different scheme of things. We must be willing to admit that a great deal more could be accomplished and that through omission rather than commission, we have rendered a less efficient service. Some form of reformation will and should be made, and the present scheme of not differentiating between classes is the best, until we, as Medical men, offer a better one and one which will accomplish as much, if not more good.

The state can handle its charity, assume the entire expense and accomplish much good among her lowest type of citizenship.

The state, by not differentiating, can reach her greater asset and charge a sufficient sum to save her harmless as to expense, and gain much more by restoring to health a higher type of citizenship.

Health work is a stupendous problem and upon its continued reformation, depends the preparedness of everything that lives, and the perfectedness of everything material.

The value of the physician's superior knowledge in formulating plans, is essential to its development, as well as to its success or failure. Then it is a serious question that is confronting us and it behooves us, in fact it is of paramount importance that we should properly estimate its value — realizing that it is to our collective as well as our individual advantage to give it careful consideration. By so doing we will save the dignity of our profession, and not be at the mercy of some poorly prepared political scheme.

The Crimean war, the Civil, the Spanish American war, all stand out with sad histories of having lost more men from bacterial diseases than from enemies bullets. Contrast this with our present method of prevention of disease, and we are doubly proud of our late victories in that we conquered the German and controlled disease. (Controlled the pest and the parasite at one great blow.)

The preventative measures that have passed the experimental stage, and that have proven beyond all question their value, were legally enforced in the army. If these measures are so imperative and essential in the army, why may I ask, are they not alike imperative in civil life?

It has been my pleasure to see compulsory vaccination against variola for the past ten years in school children, and it is indeed gratifying to note the father, who escaped vaccination, come down with the disease; children, dir-

ectly exposed, escape infection, and again it is gratifying to see those vaccinated against typhoid fever, escape and the stubborn member of the same household fall ill, thus proving the efficacy of the immunization. Again, it was a very pleasing experience during this year's epidemic of influenza to have a school of boys—140 in number—with not a single case of pneumonia. Contrast this with the same school unvaccinated the year previous, with 50 cases of influenza, 5 severe cases of pneumonia. A school of girls—130 in number—same prevention—not a single case of pneumonia.

I am sure such instances could be multiplied by us all, yet at the present time immunization is a voluntary proposition and the general practitioner has not immunized his people, nor has he made a strenuous effort. The State should be empowered, through legislation, to enforce such highly efficacious measures.

The public health problem is to the casual observer an intangible proposition, and it may yet be some time before the legislators realize its full importance, and appreciate the fact that man is its greatest asset when his moral, mental and physical well being is conserved—and its greatest liability when these essentials are neglected.

Surely the cow, the sheep, the hog are tangible assets, and the loss of one is felt by the owner, and effects directly his pocket book. But man has been made the legislative goat until his efficiency has been so lessened that it has become retro-active, to the extent that the entire man power has awakened a new era demanding self perservation, and thereby proclaiming man's efficiency superior to that of the beasts.

Public health work is the prevention of disease, the preservation of health the prolongation of life, the lessening of morbidity, the lowering of mortality—through its laboratories, its field workers, its statisticians—has shown through this method of education that a high standard of health can be obtained. It has also been shown that its conservation has been sorely neglected.

Subjects for immunization have remained unimmunized.

Curables have remained uncured.

Operatables have remained unoperated upon.

To relieve this situation, let the physician wake up to his individual responsibility and see to it that his clientele comes up to a high standard of physical fitness. Should the State, through its laboratories, its field workers, its statisticians, ascertain that a member of a physician's clientele has been neglected—in that event the state should, and it becomes its duty, to enter in and protect its defectives.

Any one of the State's agents should make every effort to relieve the defective through the parent, guardian and family.

A monthly report should be made to the county medical society, which should in turn endeavor to meet the situation. This failing, the State should take prompt measures for the relief of the sufferer.

There is a clear and distinct duty the State owes to its citizens who are in need of and have not received medical or surgical treatment. This relief should be given by the best qualified medical and surgical men, who should receive adequate remuneration for services rendered. This service should be financed through taxation and with disregard to class distinction.

Where the individual physician fails to respond to his greater duty to the community at large, his individual and personal relationship as a family advisor should become a matter for collective action by the community physicians; otherwise, this situation should be improved through the State.

In conclusion, I would suggest for your attention the advisibility:—

First—the appointing a special committee to prepare a plan for a public health administration.

Second—The committee shall have the power to associate with itself experts who are interested in and are well versed in the facts which are fundamental to the success or failure of such a plan.

Third—That this committee should act in conjunction with the American Public Health Association, the State Board of Health, the Public Health Association, the Southern Medical Association.

Fourth—That this committee submit a plan on organization—outline its administration, and pay especial attention to health supervision and treatment of school children—the handling of the unimmunized—the curing of the curables—the operating upon the operables, etc.

Fifth—This committee to serve without remuneration, but their actual expenses incurred shall be paid by this society.

SUMMARY

Finally, I would like to quote from the report of the Special Committee of the A. M. A. for 1919, Social Insurance Series, Pamphlet XI:

"The responsibility, is threefold: communal, industrial and individual. But the burden today is almost entirely individual. The community has accepted part of its liability and endeavored, by sanitation, preventive medicine and hospitalization, to improve the situation. Industry has, until now, evaded its entire responsibility and liability. The individual still bears the brunt of the burden and the cost of sickness as a personal calamity. The community and industry have begun to realize and accept their share of the liability. We have in the past received from southern and southeastern Europe enormous numbers of hardy, vigorous laborers and industrial workers. We have used them lavishly, and their labor extravagantly. We have neither wisely harbored their energy nor salvaged the damaged. We have recklessly used this labor as if the supply were unlimited. We have indeed treated it as we dealt with our forests and our mines. We have been mining out our labor and burning it up. Now the war is over, hundreds of thousands of these people are returning to their former homes, not to return here. This country is facing a scarcity of labor, and must care for it and salvage it, when injured, as never before.

The remedy for this situation lies economically in a redistribution of costs, not of adding new costs, but rearranging the present method of expending the costs already being expended. Large numbers of wage-earners probably a majority of them, now spend each week enough money on funeral insurance, that they may be sure of a decent burial, which would equal or more than equal their share of any just sickness insurance scheme to give them sick benefits, maternity and adequate medical care, and a hundred dollar funeral benefit. Improved medical care must come from more cooperative

and less purely individualistic care from the medical profession. Free choice of physician by patient, and present relation of patient to physician, and just and assured remuneration for work done by the physician can easily be assured to the physicians under an insurance plan.

Preventive and curative medicine can equally be more fully developed with free play for individual development of physicians. The alternatives offered by the funeral insurance companies are a further development of preventive medicine, state care of the sick by salaried physicians and leaving the profits of funeral insurance undisturbed."

There is a tremendous problem before us, and we, as medical men, realize its vast proportions; it does not take a spectacular epidemic of infantile paralysis, not the too recent outbreak of Influenza, to make us appreciate the vast waste of human endeavor, due to the constant but less spectacular disease.

The laity are accustomed to and accept as a natural law of nature the usual number of deaths, one-half of which are preventable. We have trusted too much to personal liberity; to the idea that self preservation is the first law of Nature. In prevention, it has been my experience that self preservation is the last law of Nature.

We inherit, through our profession, the distinction of being the guardians of the health of our people, and, it is our duty, and should be our privilege, to safeguard it.

It may not be through Insurance, it may not be through State Medicine; it must be a remedial measure that will reach all the people all the time.

This remedy should and must come from the Medical profession.

Dr. Parrott: I wish to congratulate Dr. Reynolds on that splendid paper and that the Society should also be congratulated. In order that it may receive the attention it should I make a motion to appoint the following committee—to which the address should be referred to for consideration:

Dr. Laughinghouse, of Greenville; Dr. Long, of Lexington; Dr. Manning, of Durham.

Scientific Papers

SECTION ON PRACTICE OF MEDICINE

SECTION ON CHEMISTRY, MATERIA MEDICA AND THERAPEUTICS

SECTION ON SURGERY

SECTION ON GYNECOLOGY AND OBSTETRICS

SECTION ON EYE, EAR, NOSE AND THROAT

SECTION ON PEDIATRICS

SECTION ON PATHOLOGY, PHYSIOLOGY, BACTERIOLOGY AND ANATOMY

SECTION ON PUBLIC HEALTH AND EDUCATION

Practice of Medicine

REPORT OF TWENTY-FIVE AUTOPSIES ON INFLUENZA PNEUMONIA

JAMES B. BULLITT

During the Influenza epidemic of 1918 the patients landed from the transports quickly filled all the hospitals at Brest. It became necessary to accommodate the overflow at the unfinished embarkation hospital at Kerhuon, three miles away. Base Hospital 65 (a North Carolina unit), with a small personnel, with almost no equipment and in uncompleted buildings, cared for about 3500 patients at Kerhuon Hospital Center during October.

The deaths from pneumonia during that month were something over 600. Under the conditions existing it was practicable to perform only 25 autopsies lack of time and the shortage of equipment prevented taking bacteriological culture and also prevented microscopical study of the tissues at that time. During the past few months these tissues have been sectioned and are made the basis of this report. For tissue stains hematoxylin and eosin and eosin-methylene blue have been used, while the combination of Goodpasture's and the Weigert fibrin stain (published by MacCallum) has been used for the demonstration of the bacteria in the tissues. Gram positive cocci occurring in pairs and in short straight chains are referred to herein as pneumococci. Several lungs, which in the gross were suggestive of tuberculosis, were also stained with carbol fuchsin.

The numbers involved are too small to be of much statistical interest, especially in view of the many extensive reports of the past month. In many respects these cases accord closely with those reported from other hospitals, but it is desired to call attention to certain points at variance with or not touched upon in the findings of other observers. All the cases exhibited a broncho-pneumonia or a lobular pneumonia, with a striking tendency to confluence. In eight cases this confluence was so great that only the anterior borders of the lungs and occasional patches here and there seemed to contain air. Such portions were of course markedly emphysematous. Seven others showed definite lobar consolidation. In four of these the lobular involvement of the remaining portions of the lungs was conspicuous, while in the other three it was scarcely noticeable in the gross, though quite evident under the microscope. Only one case was essentially an interstitial pneumonia.

Bacteriological study without cultures from either the living patient or the autopsied body is necessarily incomplete and unsatisfactory. But the excellence of the Goodpasture—Weigert stain is such as to justify some fairly definite conclusions from the bacteria stained in the tissues. Nothing resembling the influenza bacillus is found in any of these sections. The pneumococcus, occurring in 24 of the 25 cases, is the predominant organism. The streptococcus appears in but three, and in two of these it is much less numerous than the pneumococcus. The one case in which the streptococcus predominates showed complete consolidation of the middle and lower lobes of the right lung, with extensive necrosis. The remainder of the right lung and the whole of the left lung seemed almost normal in the gross, but microscopically there is extensive capillary engorgement with slight hemorrhage

and an extensive but slight interstitial exudate. Both organisms are numerous in the consolidation portion, both are scarce elsewhere. The streptococci are chiefly in the alveolar walls, the pneumococci about equally distributed in these walls and in the alveolar exudate. In several cases miscellaneous bacteria are found which are doubtless postmortem invaders. In nine cases an unidentified bacillus, morphologically much like the colon bacillus but Gram positive, is found. Since these do not appear in the other organs thus far studied, since they do not occur in the blood vessels but only in the alveolar exudate and since large numbers have been engulfed by the leucocytes, it is reasonable to presume that they have played some part in the pathology. Unfortunately the inability to make cultures renders identification impossible. It is probably a mere coincidence but the only two cases in which this organism is more numerous than the pneumococcus are the only two in which mediastinal and cutaneous emphysema occurred. The one case in which pneumococcui do not occur died after an illness of thirty days. His acute symptoms had subsided after about ten days, but a slightly elevated temperature, a rapid pulse and some prostration continued. His condition was not considered serious until the twenty-eighth day when he became dyspnoeic, and cyanotic and sank rapidly. Extensive tough fibrous adhesions bound both lungs to the parietes. Both lungs were riddled with small cavities and shot through with old scars. Both lower lobes exhibited a caseous pneumonia. Fresh exudate consisting of fibrin and endothelial leucocytes occurs in all parts, and innumerable tubercle bacilli are found everywhere. It is impossible to distinguish accurately between the damage done by tuberculosis and that done by the influenza pneumonia. Unless influenza had stirred a quiescent tuberculosis processs into enormous activity it is hard to understand how this officer had passed the physical examination for overseas service only a month before.

The distribution of bacteria presents points of some interest. None are found in the areas of mere engorgement and hemorrhage, few or none where the alveoli are filled with hyalin exudate, and few where the exudate consists chiefly of endothelial leucocytes, lymphocyes and plasma cells; though they may be abundant in neighboring areas containing polymorphonuclear leucocytes. When the illness has been of short duration the tissues are teeming with the organisms, both free in the exudate and enclosed in the leucocytes. The numbers are greatly reduced after a week, and after three weeks they are practically limited to pleural exudates and to spots of focal necrosis and abscesses. This seems to be true even though there may still be considerable areas of what seems to be fresh exudates, both enterstitial and intraveolar. The absence of organisms, above referred to, in alveoli containing only blood and hyalin material might be explained by the view that these represent outlaying zones of toxic absorption, surrounding foci of bacterial accumulation and leucocytic exudate. The structural picture in confluent lobular pneumonia would seem to accord with this view. But there are numerous cases in which the foci of lobular pneumonia with leucocytic exudate are rather widely separated, while all the intervening areas show this tendency to congestion and hemorrhage. The size of these areas and the relatively sharp transition as we approach the leucocytic zone militate against the idea that this is merely a part of the lobular pneumonic process. Moreover there is often a somewhat extensive necrosis, similar to that described by LeCount,

at considerable distances from the distinct pneumonic foci. It seems legitimate to suspect that we may be upon the track of a primary influential pathology.

A full description of the gross and microscopical picture in this series would be in large part a mere repetition of the descriptions given by many others. It is desired to call attention merely to certain points of difference.

Emphasis has been repeatedly laid upon the differences in the inflammatory reaction dependent upon the complicating organism. A more or less definite correspondence appears to have been established for the tissue changes in the presence of the pneumococcus, the streptococcus and the influenza bacillus respectively. Although nearly all the cases discussed in this paper were clearly of pneumococcic etiology, yet the pathological processes correspond more closely with those usually associated with the streptococcus. I epitomize one author's excellent description based upon a large experience with these pneumococcus pneumonias.

1. Pleura smooth; exudate absent or scarcely perceptible, though in late cases the microscope may show a leucoytic infiltration.

2. Bronchi not conspicuous; empty or containing fluid; walls not infiltrated; mucosa usually normal.

3. Blood vessels normal.

4. Alveoli contain fluid or a delicate fibrin mesh; they may be lined with a hyalin skim; contain many red blood cells but few leucocytes; walls normal or but slightly infiltrated.

In contrast with the above the following outline of my cases could almost be substituted for the usual description of streptococcus infection.

1. Fourteen showed extensive fresh fibrinous adhesions binding the lungs to the parietes. These include the three that exhibit the streptococcus as well as the pneumococcus. Six, including three of the above mentioned fourteen, had dense fibrous adhesions. In the gross these appeared to be healed lesions of a previous process, but microscopically the richness in capillaries, fibroblasts and leucocytes indicates that at least four of them are of recent origin. Three cases (one pure pneumococcus and two pneumococcus-streptococcus) had large pus collections in one pleural cavity. Two others had from 150 to 200 c.c. of slightly tinged fluid in each pleural cavity, while several others had smaller amounts of similar fluid.

2. In many the large bronchi were intensely inflamed and contained considerable amounts of muco-purulent material. The smaller bronchi are almost invariably full of polymorphonuclear leucocytes; the epithelium usually shows much necrosis, and is often entirely lifted from its base by an exudate of fibrin and leucocytes. The walls are usually much infiltrated with leucocytes—chiefly polymorphonuclears but often endothelial leucocytes and plasma cells as well. Very frequently the infiltration and necrosis are so marked as to render recognition of the bronchus difficult.

3. Infiltration of the walls of the small arteries is usual. Thrombosis in both arteries and veins is common, and in late cases organization of these thrombi is often seen.

4. The alveolar picture is very variable in different lungs and in different parts of the same lung. Many places show the appearance characteris-

tic of ordinary lobar pneumonia, i. e., well preserved, essentially normal walls, alveolar cavities filled with a delicate fibrin mesh entangling innumerable red blood cells and few or a moderate number of leucocytes. But there is scarcely a case in this series that does not show wide areas where the alveolar walls are greatly infiltrated, often completely obscured, sometimes by polymorphonuclears, sometimes by endothelial leucocytes and plasma cells. The air sacs in such instances are packed with similar cells to which are added the exfoliated epithelium. Frequently the fibrin mesh is not appreciable. In other places a dense hyalin material fills the alveoli, often seeming to fuse through the walls rendering them scarcely visible. At times this hyalin seems to have its origin from fibrin, at times from the fusion of red blood cells. Both in these hyalin areas and in the areas of intense cellular infiltration necrosis of the pulmonary framework is common. These necroses may involve only one or two alveoli here and there or may extend over the greater part of a lobe. Pulmonary abscesses of microscopic size are seen in nearly every case, while four showed large numbers of cavities varying from one to five centimeters in diameter. In four others without actual cavity formation, large areas involving from one-fourth of a lobe to a whole lobe were soft. gray and friable, tearing from a touch of the finger. Microscopically these areas are completely necrotic, the pulmonary framework being scarcely recognizable and the whole mass consisting of disintegrating cells and granular debris. Bronchiectatic dilatations are common.

5. Marked tendency to organization is usually regarded as characteristic of infection with streptococcus or the pheiffer bacillus rather than the pneumococcus. In my cases however there is scarcely any one feature more striking than the rapid and extensive fibrosis. In every case surviving as much as a week this process becomes evident; in those living three weeks it is very prominent. The alveolar walls and intraelveolar exudate, the bronchial walls and to a lesser extent the bronchial exudate, the vascular walls and thrombi, all are involved. It is not uncommon to find nodules resembling tubercle or small gummata. Sometimes a thin capsule of newly formed connective tissue surrounds a soft granular necratic mass. Sometimes the whole nodule has become organized. In some cases large areas of pulmonary tissue are completely obliterated. In two men living about five weeks the condition is particularly interesting. Each of these had entered upon apparent convalescence after an acute illness of about ten days. Although physical examination showed no especial reason why they should not recover, yet they did not regain strength, their pulse rates continued rather high and very slight effort produced dyspnoea and cyanosis. One sank gradually with a steady increase of the symptoms above described. The other seemed to be improving. The night nurse reported him in good condition at 4 A. M. He was found dead in bed at 5 A. M. No embolus nor other cause for the sudden death could be found. Both cases showed a slight degree of chronic myocarditis. There was scarcely any acute pathology remaining in the lungs, but the extreme condition of fibrosis left little serviceable pulmonary tissue. The picture suggests an analogy to those cases of nephritis in which recovery from the acute disease is followed by a fatal crippling from the repair processes.

The presence of large amounts of pigment from distintegrated hemoglobin is to be expected in lungs with such extensive hemorrhage. It is uniformly

present in this series, often in such quantities as render difficult the search for bacteria in the tissues. Sometimes every endothelial leucocyte is loaded, many polymorphonuclears contain goodly amounts, and much is free in the exudate. I have been constantly impressed with the large quantity of this pigment, not only in the lungs but also in the heart, liver, spleen, kidney and other organs. In the kidney it is contained partly by endothelial leucocytes; but most of it appears in the epithelium to some extent in that of Bowman's capsule and the convoluted tubules, but especially in the cells lining the ascending tubes of Henle and the collecting tubules. It occurs chiefly in the basal portions of these cells.

As in the epidemic elsewhere necrosis and hemorrhagic inflammation of the rectus abdominus muscles was common in our hospital. There were two cases among those autopsied. I have not seen mention of, similar myositis in other muscles. In one of my cases it occurred in moderate degree in the serratus magnus. Severe pain in the right side had caused suspicion of empyema. Needle puncture gave negative results. At autopsy the pleura was normal, but over a space of two or more inches in diameter the muscle was soft and dark in color. Microscopically there is a moderate hyalin necrosis, a small amount of hemorrhage and a slight leucocytic infiltration. This suggests a possible explanation for the localized pains in the back, sides and elsewhere that are so often troublesome a long time after recovery from influenza. I have in mind three men of our personnel who had not been seriously ill with influenza but who were largely incapacitated for several months afterward with muscular pains, in the left calf, the left hypochardical and right scapular regions respectively.

A CASE OF EVENTRATION OF THE DIAPHRAM

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Eventration of the diaphram, sometimes known as dilatation, insufficiency, "hochstand", or elevation of the diaphram denotes a condition in which half the organ is thinned out and distended, rising high into the thoracic cavity with corresponding upward displacement of the abdominal viscera on the affected side. There is no break in continuity as in diaphranatic hernia.

The subject has been well reviewed in our literature by Sailer and Rhein (1) in 1905 and particularly by Bayne-Jones (2) in 1916, so that no extended review will be given here. The latter collected 45 cases, only four of which had been reported from this country. Aronson (3) reported a case in 1916 which with the present case makes a total of 47 cases. In four instances the right side was affected, in forty-four the left. Eppinger (4) has shown that the ratio of eventration to hernia of the diaphram is about 1.37.

Cruveilhier (5) considered the condition secondary to disease of the phrenic nerve, of the diaphramatic muscle, or abdominal disease causing unequal pressure on the two sides of the diaphram; but most subsequent observers have adopted Thoma's (6) view, that eventration is an anomaly caused by defective development. Bayne-Jones points out that pregnancy, the commonest cause of abdominal distention, has not been associated with this condition (only 8 out of 43 adults were females) ; that it has been found

in four foetuses or young children, and that in nine of the forty-five cases which he reviews, other developmental anomalies were present.
Aronson's case had Hirschsprung's disease, and the case here cited had bilateral inguinal herniae.

Post mortem examination has shown the affected half of the diaphram reduced practically to a thin fibrous sheet with almost no muscle tissue remaining. The dextro-cardia, which has heretofore invariably been found, in eventration of the left side has generally been attributed to mechanical displacement of the heart and mediastium by the bulging up of the diaphram. Sailer and Rhein take issue with this view, showing that the elacticity of the right lung is more important, and citing a number of cases of displacement of the heart to the left with hypoplasia of the left lung, both with and without elevation of the diaphram. In the present case the heart was not displaced to the right but directly upward.

The left lung is not compressed, being only partially developed, at times showing incomplete division into three lobes. The development of the thoracic walls is normal. Below the diaphram, developmental anomalies of the colon and mesentery have been found with a varying amount of upward displacement of the abdominal viscera.

These cases may have no symptoms referable to the diaphramatic condition; some have cough and dyspnea, probably due to cardiac displacement; others have gastro-intestinal symptoms.

On physical examination lagging of the left side with displacement of the apex beat will be seen. The lower left chest is usually tympanitic with absence of breath sounds, and fremitus, and Litton's sign. In Sailer and Rhein's case the lower left back was dull because of an enlarged spleen. In the present case the lower left chest was dull, possibly from the same cause or from a preceding tubercular pleurisy.

The Roentgenological examination has been well set forth in Becker's (7) article. When the distended stomach fills the left lower thorax, the clear area is free from the usual pulmonary markings and its upper surface is bounded by a smooth elliptical line. Fluoroscopic examination shows this line to be the diaphram, which during respiration may reveal the left half contracting normally or paradoxically.

Eventration is apt to be mistaken for hydro-pneumothorax and needled, and the differentiation between eventration and hernia of the diaphram is at times extremely difficult.

Case Report;—A real estate agent, aged 31, single, was referred for examination Feb. 7, 1916, by Dr. R. L. Gibbon. His mother had died at 51 of stomach trouble; a brother, who had had no disease, had never been strong; two brothers had died in infancy. The patient at the age of seven had nearly died with dysentery lasting a month. No other illness until the age of 24, when he had a fever of ten day's duration, called malaria. Had no chills with this, but during this fever developed a cough which he has had ever since. Five years ago took a cure for alcholism, and has abstained since. Chews and smokes. Had gonorrhea and venereal herpes some years ago. Two years ago had a nervous breakdown and stayed in bed two months. Four years ago, after cranking his car, felt a sharp pain in right lower abdomen, and found he was ruptured slightly on both sides.

At present complains of general weakness, walking up hill brings on dyspnea and cough and at other times pain over sternum. If he lean forward and coughs, the upper abdominal muscles, at the costal margins, will contract violently leaving lumps which he has to massage until they disappear. Coughs some at night and on rising, and brings up an ounce or more of purulent sputum in the morning. No night sweats in four years. Has dumb chills in spring and fall and on damp days, with enough fever to make him sit close to a stove. Before his fever seven years ago, he weighed 135 pounds, and now weighs 105 pounds. Appetite good. Sleeps very poorly, averaging three hours a night. No gastro-intestinal or genitourinary symptoms. His cough, dyspnea, weight, and weakness have not varied much in the past seven years. He takes no exercise, has few amusements, works steadily and worries a great deal.

Physical Examination:—A small, weak, pale, thin man. Eyes and throat normal. Epitroclear and left posterior cervical glands enlarged. Skin dry and looks transparent. Chest; The lower left side seems smaller than right and lags on respiration. The right side is hyperresonant throughout, with small moist rales under middle third of scapula behind. The resonance over the upper third of the left side is considerably less than the right side, but has no tympanitic quality. The lower half of the left front is tympanitic; the lower two-thirds of the left axilla and the lower half of the left back are flat. Breath sounds harsh and broncho-vesicular over upper half of left side, absent below. No rales. Voice sounds and tactile fremitus absent over lower half of left lung. Abdomen flat, nowhere tender, thin walled; liver dulness normal and spleen not palable. Both inguinal rings are weak and stretched with small incomplete herniae, direct on the right, oblique on the left. The femoral rings bulge considerably on coughing. Extremities and genitals normal. Superficial and deep reflexes normal. Joints normal; there is a moderate spinal curvative with apex opposite the left scapula; this does not modify the mobility of the vertebral column. Apex beat in midclavicular line, third interspace, left. Heart size and sounds, rate and rhythm normal. Blood pressure 118-80.

Laboratory Examination:—Haemoglobin 75%. White count 14,800. Polynuclears 72%, lymphocytes 17%, large mononuclears 7%, eosinophils 2%, basophils 2%. Red count 4,800,000. No plasmodia. Shape and staining reaction of red cells normal, some variation in size. Wassermann strongly positive.

Urine acid, 1023, negative for albumen, sugar, indican; microscopically negative.

Feces negative for eggs and protozoa.

Sputum showed tubercle bacilli.

Roentgen Examination:—The plates showed on the right side a tubercular focus below the right apex, corresponding with the moist rales heard in this area. The left side showed over the lower half of the chest a uniformly dense shadow bounded above by a smooth curved line, level with the sixth rib behind and fourth in front. The heart shadow was high and largely behind the upper end of the sternum. (The Roentgenograms were made by the late Dr. J. W. Squires and unfortunately destroyed after he entered the army.)

Under the impression that this was a left pleural effusion the left back was needled, but no fluid obtained. The needle, inserted in several places, seemed to be always in solid tissue. A fluoroscopic examination now demonstrated that the smooth upper border of the left chest shadow was the diaphram which could be seen contracting normally on inspiration. The cardiac contractions could be seen above this, from the third interspace to the sternal notch. Gastro-intestinal plates revealed no abnormality and a corrected diagnosis of eventration of the left side of the diaphram was made. The patient died a year or so later from pulmonary tuberculosis.

The two unusual points in the case were the displacement of the heart directly upward, and the dulness in the left lower back and axilla which may possibly have been due to an enlarged spleen as in Sailer and Rhein's case, or to a previous tubercular pleurisy.

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X-RAY FINDINGS IN THE LUNG FOLLOWING INFLUENZA TUBERCULOUS AND OTHERWISE

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Numerous patients are presenting themselves to the general practitioner and specialist, following an attack of influenza with varying symptoms, some complicating the chest and others without apparent chest symptoms. The cases are very often referred to the rœntgenologist for his opinion of the present lung condition and an x-ray examination follows. Before I go further, let's get clearly in mind what has taken place in the lung of the influenza pneumonia subject.

Lung involvement complicating influenza is a most severe type of infection and produces tissue changes in varying degrees, in trachietis, trachiobronchitis, broncho-pneumonia and pneumonia. From the microscopic examination of infected lungs of monkeys in which the influenza bacillus had been directly applied to the mucous membrane of the nose and throat, producing the same symptoms as influenza pneumonia in man; and of human lungs following death from influenza pneumonia there was found extensive hemorrhage, peri-bronchial areas of consolidation with an exudate of leucocytes, mono-neucler cells and desquamated alveolar epithelium and thickening and infiltration of the alveolar walls. There were considerable patchy emphysema of the periphreal lobules. The pleural surfaces were rarely involved. This amount of inflammation caused certain thickening and

tissue changes that cast an x-ray shadow. It remains for the roentgenologist to find and properly interpret from the x-ray plates evidences of these pathological changes. The x-ray examination during or immediately after an attack of influenza pneumonia shows nothing beyond the well known opacity of a pneumonia lung and is of little value.

Only a small proportion of the cases give a history of having had any lung trouble previous to the attack of the influenza. The lung infection at the time of the pneumonia so lowered the bodily resistence, enabling a latent tuberculous foci to exert itself. It is this tuberculous complication which requires our most careful investigation. The previous inflammatory condition has produced a general thickening of the lung tissue so that a hazy appearance is given to the x-ray plates.

These tuberculous conditions very often affect the periphery of the lung, giving a fan like appearance of increased density. The apices, one or both, are frequently affected, showing a cloudiness and sometimes containing a faint floculent looking mass of tuberculous deposits, having the appearance of half cooked oatmeal. These soft tuberculous deposits may be seen anywhere in the lung and are often widely separated. Heavy hilus shadows and otherwise dense calcifications indicate a condition of long standing. It often happens that a slightly increased density of a soft tuberculous mass will develop in the area of a previous pneumonia consolidation. There will be noticed perfectly normal lung near an erea of increased density and the comparison is apparent.

In these cases in which there is evidence of tuberculous deposits there is one sign that is worth all the others. If the costal and sternal cartilages of a young person are heavily calcified, or show the deposits isolated, indicating a sufficiency of lime salts in the blood, the tuberculous infection if seen (and it generally will be in these cases) will be cared for under proper treatment.

Now, on the other hand there are lungs that have not fully recovered from the influenza attack and coupled with certain nervous and digestive disturbances give many and varied symptoms. No tuberculous deposits are seen in these lungs, though there is a general haziness not seen in otherwise normal lungs. The areas most affected during the influenza illness show more pronounced haziness and often a mottling, approaching in appearance the tuberculous mass. This condition is seen at an earlier date after the illness than does the tuberculous deposits and does not hold on or increase, whereas the tuberculous area becomes more pronounced. The walls of the bronchial tubes are thickened and the bronchial and peri-bronchial glands show increased shadows. The priephery of the lungs and the apices are less frequently involved while the central and lower portions contain more of the shadows. Both lungs are generally involved. These findings are to be thought of as a normal lung following such a marked inflammatory reaction during the previous illness. Many normal lungs show shadows caused by some previous lung infection, but we have come to regard them as normal lungs at the present time, having fully recovered but still showing the marks of the infection. But these normal lungs show more clear cut, definite shadows and the haziness has disappeared. The object of this paper is to show the importance of careful lung examination with the x-ray following

the influenza pneumonia cases and the appearance of the tuberculous and non-tuberculous lung.

As complications following influenza pneumonia we also get pleurisy with effusion, empyema and empysematous areas but they are more easily noted and will not be discussed in this paper.

In studying the lung plate there are many conditions to be dealt with and it is not necessary that the roentgenologist do the ground hog stunt, for in the case of seeing no shadows to frighten him he may be caught out in some unpleasant season; yet if he runs from every shadow he sees and retreats he will miss many of the beauties of the next forty days.

There are shadows and if correctly interpreted will help in the proper diagnosis and subsequent treatment.

PRELIMINARY REPORT ON A STUDY OF THE GOETSCH TEST

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This study has been undertaken with the hope that out of it may come a more practicable test for the busy practitioner of today who in my opinion does not have the time to devote to such a lengthy technique as is used by Dr. Goetsch. We think that we have gotten very satisfactory results from this test during its use of six months or a little longer by us. Let me say in the beginning that to the men who have the time I would strongly advise their utilizing the test as laid down by Dr. Goetsch. I believe it is based on fundamental physiologic principles and in the right hands will certainly give accurate results.

First let us review the Goetsch Test or better termed "The Adrenalin Hypersensitiveness Test." The following is an extract of a paper published by Drs. Norman Clive Nicholson and Emil Goetsch of the Trudeau Sanatorium, Trudeau, N. Y., under the heading of "The Differentiation of Early Tuberculosis and Hyperthyroidism by Means of the Adrenalin Test," which article was published in the American Review of Tuberculosis, volume 3, No. 2, April, 1919. Dr. Goetsch has been using this test for about five years during which time he has had many of his positive findings to come to operation where, he claims, the accuracy of the test has been "confirmed by operation and microscopic study of the gland tissue."

The technique of carrying out the test is as follows:

"We want the patient to be as calm and restful as possible before the test so that the reaction to the adrenalin will stand out sharply in contrast. Accordingly the patient is put to bed the previous day and is reassured by the attending physician that the test will be in no way painful or associated with any danger. At this time, too, the standard case-history is supplemented by a history taken with special reference to symptoms of thyroid disturbances. One must determine the presence or absence of nervousness, throbbing, tachycardia, tremor, depressions, crying spells, struma, apprehensions, hot and cold flushes, cold hands and feet, fainting spells, memory lapses, dermatographism, amplified by a detailed scrutiny of the signs suggestive of

hyperthyroidism, such as positive eye-signs, (Joffroy, Moebius, von Graefe and Dalrymple) tremor, struma, thrills or bruits over the thyroid, throbbing of the carotids and of the abdominal aorta, the condition and distribution of the hair, and slight edema of the eyelids, legs or hands. In this connection it should be borne in mind that hyperthyroidism may exist with negative eye signs and only indefinite clinical findings in the thyroid gland. Consequently we feel that the response to adrenalin is a much more dependable criterion of hyper-activity of the gland.

"On the day of the test the patient is placed as nearly as possible under normal conditions. By this we mean in a warm room without the appliances such as hot water bottles, heating devices, etc., which are common to the outdoor treatment of tuberculosis. The patient, of course, is to take his meals in bed. We emphasize these precautions because of the well-known hypersensitiveness and irritability of hyperthyoid and tuberculous patients. Because of the tendency of the thyroid to hyperactivity at the menstrual period the test is not given during this time.

"We proceed with the test as follows:

"Two readings are taken, at five minute intervals, of the blood pressure, systolic and diastolic, pulse rate and respiration. A note is made of the subjective and objective condition of the patient. This includes the state of the subjective nervous manifestations, the throbbing, heat and cold sensations, asthenia, and the objective signs, such as pallor or flushing of the hands and face, the size of the pupils, throbbing of the neck vessels, and precordium, tremor, temperature of the hands and feet, prespiration, and any other characteristic signs or symptoms noticed. These signs are all noted previous to the injection of the adrenalin so that comparison may be made after the injection.

"A hypodermic syringe armed with a fine needle which, when inserted, causes little discomfort, is then used to inject 0.5 cc. (7.5 minims) of the commercial 1-1000 solution of adrenalin chloride (Parke, Davis & Co.) into the deltoid region, subcutaneously. Intramuscular and intravenous injections are not given. Readings are then made every two and one-half minutes for ten minutes, then every five minutes up to one hour, and then every ten minutes for half hour or longer. At the end of one and a half hours the reaction has usually entirely passed off, sometimes earlier. The repeated early readings are made in order not to miss certain reactions on the part of the pulse and blood pressure that may come on in less than five minutes after the injection is made. This is particularly true of cases of active hyperthyroidism.

"In a positive reaction there is usually an early rise in blood pressure and pulse of over ten points at least; there may be a rise of as much as fifty points or even more. In the course of thirty to thirty-five minutes there is a moderate fall, then a second slight secondary rise, then a second fall to the normal in about one and one-half hours. Along with these one sees an exaggeration of the clinical picture of hyperthyroidism brought out, especially the nervous manifestations. The particular symptoms of which the patient has complained are usually increased, and in addition there are brought out many symptoms which have been latent. Thus it is not uncommon to have extrasystoles brought out, after the injections of the adrenalin.

The patient is usually aware of them and may tell one that she has felt this same thing a year or two previously, at which time the symptoms of the disease were more active.

"The following may all or in part be found: increased tremor, apprehension, throbbing, asthenia, and in fact an increase of any of the symptoms of which the patient may have complained. Vosomotor changes may be present; namely, an early pallor of the face, lips and fingers, due to the vasoconstriction, to be followed in fifteen to thirty minutes by a stage of vasodilation with flushing and sweating. There may be a slight rise of temperature and a slight diuresis.

"In order to interpret a test as positive we have regarded it is as necessary to have a majority of these signs and symptoms definitely brought out or increased. Thus there is at times a considerable increase of pulse rate without much increase in systolic blood pressure, but with a considerable increase or exacerbation of the objective signs and symptoms; or there may be an increase of ten points in the pulse and blood pressure and a moderate increase of the symptoms and signs; or again, there may be only slight changes in pulse and blood pressure and considerable change in signs and symptoms. These may be regarded as positive. In a word, then, one must consider the entire clinical picture produced in order to gain a correct interpretation, just as in the disease itself one cannot expect every one of the characteristic signs and symptoms to be present in order to make a diagnosis."

In the beginning I stated that in my opinion this test was based on physiologic truth. A slight review of your knowledge of physiology and pharmacology will show you that the secretion of the thyroid glands, be it iodothyrin, thyroiodin or whatever it may be, is a stimulant to the autonomic nervous system. Now when this system is continuously bathed in this toxin of hyperthyroidism it becomes hypersensitive. Another look at your pharmacology will tell you that adrenalin is the quickest and most practical observable drug in its action that we possess for stimulating the autonomic nervous system. With this in mind adrenalin is the drug for this use. Too, you will agree with me that it is perfectly plain that we have a need for such a test for how many times do we find a case of tuberculosis we call hyperthyroidism or how many times we find a cause of hyperthyroidism that we call tuberculosis? Only a glance at our previous errors will prove that we have a serious need for such a test as this and most welcome will it be if this is it. As stated above I am of the opinion that Dr. Goetsch's test is impracticable for the busy general practitioner of North Carolina and for that reason the following studies have been undertaken with the hope that out of them may come a more practical test for the general practitioner. This preliminary report is upon a study of a series of fifty-five patients. Five normal persons, twenty having tuberculosis in different stages but having no signs or symptoms of hyperthyroidism, twenty-two suspicious thyroids having tuberculosis and six tuberculous patients known to have hyperthyroidism. We have taken the following list of symptoms and signs of hyperthyroidism and have classified these findings in each case under the following headings: Systolic blood pressure, diastolic blood pressure, pulse pressure, pulse rate and quality, tremor, nervousness, palpitation, diuresis, temperature,

respiration, apprehension, pupilary changes, vasomotor changes in face, hands and feet and sugar in the urine. I could not think of taking up your time by reading the tabulation, as interested as I am in it. For that reason I will proceed to make a comparative study of these signs and symptoms. In each of the four classes of patients named above, systolic blood pressure rose practically the same number of points reaching its maximum in the known cases of hyperthyroidism in nineteen minutes, having a secondary rise in forty-one minutes and remaining above normal for an average of an hour and seventeen minutes. In the twenty-two suspects the systolic blood presure rose to its maximum in an average of eighteen minutes. In four suspects, the systolic blood pressure made a second rise in thirty-nine minutes and remained up for an average of fifty-nine minutes. The other eighteen cases of this suspect group reached their highest in thirteen minutes and returned to normal in twenty-three minutes. The twenty "no hyperthyroids" reached their maximum systolic blood pressure in an average of 11.5 minutes and returned to normal in an average of twenty-two minutes. The normal class reached its maximum systolic pressure in seven minutes and returned to normal in nineteen minutes.

Diastolic pressure: In the "known hyperthyroids" the diastolic blood pressure fell seventeen points, the maximum fall corresponding in minutes to the maximum rise in systolic pressure and continued in the same proportion until a normal level was reached by the systolic pressure. In the same four suspects mentioned above the diastolic blood pressure fell sixteen points with the maximum systolic rise and returned to normal along with the systolic blood pressure. In the other eighteen cases the diastolic blood pressure fell an average of nine and one-fifth points corresponding to the maximum systolic rise. It also returned to normal with the return of the systolic pressure to normal. The "no hyperthyroids" gave a diastolic fall of seven points which occurred at the same time as the maximum systolic increase and returned to normal therewith. The normals had a fall of six points in diastolic blood pressure corresponding to the maximum systolic rise and returned to normal with that of the systolic.

Pulse pressure: The "knowns" had a maximum increase of fifty-six points which pressure returned to normal with the systolic pressure. Four suspects had an increase of forty points while eighteen suspects had an increase of twenty-nine and one-half points. The class of "no hyperthyroids" had an increase of thirty-one points while the normals had an increase of twenty-eight points.

Pulse: In the "knowns" the pulse rate increased an average of twenty-seven points. In four suspects there was no increase or decrease. In eighteen suspects there was an average increase of fifteen points (maximum increase thirty, minimum increase six.) The "no hyperthyroids" had an increase of fourteen points while the normals decreased three points per minute.

Quality: In the "knowns" the pulse became irregularly, unequal and varied in volume. Fourteen suspects had the same type of pulse while eight had a normal, full, well rounded pulse. In the "no hyperthyroids" the pulse was equal and regular in sixteen cases but there was a slight irregularity present. In the normals the pulse was full and bounding, no irregularity or inequality was detected except slight inequality in one case.

Tremor: Tremor was increased in every case in the series as well as was nervousness. Palpitation was present in each case of the series and slight diuresis was present in all. A temperature increase of three-fifths of a degree in the "knowns" was found reaching its highest at the end of forty-seven minutes. It increased in all suspects an average of two-fifths of a degree reaching its highest in an average of forty minutes. In the "no hyperthyroids" temperature was increased two-fifths of a degree reaching its highest in forty-two minutes. In the normals the temperature was increased an average of one-fifth of a degree reaching its highest in forty-six minutes.

Respiration: In the "knowns" this was increased an average of five points. In six suspects increased an average of four points. In sixteen suspects increased an average of two points. In the "no hyperthyroids" it increased an average of one point and in the normals decreased an average of one and one-half points.

Apprehension: This was increased in each case of the series.

Pupilary changes: These changes were present in the whole series though in the six "knowns" and in three suspects there were frequent pupilary changes. In all others there was a primary slight dilitation followed by an early return to normal.

Vasomotor changes: These were present in the hands, feet and face of the entire series.

Sugar in the urine: None was found in any specimen.

Conclusion: I frankly state that as yet I do not consider this small amount of work reported upon as sufficient evidence for warranting any definite conclusions. However, if future studies substantiate these findings we will find that the differential diagnosis of tuberculosis and hyperthyroidism will be made easier for the general practitioner of our state when after the subcutaneous injection of adrenalin he finds, between fifteen minutes and one hour and thirty minutes after the injection, the following:

First: A systolic blood pressure rising ten or more points and remaining above normal for fifty minutes or more.

Second: Increased pulse rate of ten or more points per minute proportionate to the systolic rise.

Third: An increase of pulse pressure of thirty-five or more points.

Fourth: Pulse irregular and varying in volume.

Fifth: An increase in respiratory rate of four or more points per minute.

Sixth: Varying pupilary changes.

I firmly believe that this test can be made more practical for the general practitioner and for that reason we are diligently pursuing these studies at the State Sanatorium and hope to have at a future date some more definite and positive report to make. Again let me state that this paper is not a criticism of the work done by Dr. Goetsch, for, as I stated above, if any doctor has the time certainly the thing in my opinion for him to do is use the Adrenolin Hypersensitiveness Test verbatim as given in Dr. Goetsch's technique which I read to you in the beginning.

Discussion of Dr. McBrayer's Paper

PRELIMINARY REPORT ON A STUDY OF THE GOETSCH TEST

Dr. W. deB. MacNider, Chapel Hill: I wish I were in position to discuss from a clinical point of view the validity of this test. I can not do that, because I am removed from clinical medicine, but I would feel ashamed of myself if I did not get up here and congratulate Dr. McBrayer, Sr., on having a son who is sufficiently interested to make use of the material at hand and get up such an excellent paper. It is a thing that many of us could do and ought to do.

ESSENTIAL HYPERTENSION

Dr. R. F. Leinbach, Charlotte, N. C.

Some time ago my attention was attracted to an article appearing in the Journal of the A. M. A., written by the former Chief Cardiovascular and Lung Examiner of the Medical Officers Training Camp, Camp Greenleaf, Ga., in which certain personal views and opinions concerning the nature and relations of blood pressure were set forth. I was impressed with the fact that certain of these views were at variance with what I regarded as the sanest teachings on this subject. Though much less common than in former years it is still not remarkable now and then to encounter somewhat radical and iconoclastic theories in the literature regarding medical conditions of unproved nature. However, this article served to impress on my mind the divergence of opinion obtaining today after fifteen and more years of study and observation concerning the nature and relations of blood pressure.

I do not expect to clarify any of the unknown elements in hypertension but merely to present a few phases of the subject in such relations as seem warranted by a careful review of the literature of the past eight or ten years.

Doubtless to a certain extent the discordance of opinion with regard to the nature of hypertension has been contributed to by the varying names under which the subject has been presented, none of which has gained a wide spread currency; and again to the lack of a suitable clinical classification. It is a striking fact that in everyday intercourse among medical men and even in consultation work one chooses to refer to this or that patient as "a case of nephritis with high blood pressure" or "a case of arterial sclerosis with high blood pressure" or simply as "a case of high blood pressure" rather than to venture to designate it by any particular descriptive term based on the probable type of pathology. This I take it is often an evidence of wisdom as it is often difficult and sometimes impossible to predict the type of pathology which autopsy will reveal, from symptoms presenting during life. This is of course especially true in dealing with nephritis.

From the work of Gull and Sutton in 1872 on the pathology of Bright's Disease came a term highly descriptive of the pathology found in certain cases of permanent high blood pressure—namely, Arterio-capillary fibrosis. The appropriateness of this term based on the pathology of a certain type of the disease, namely a diffuse fibrosis of the smallest arterioles not limited to the kidney, is, I think, unquestioned today, yet one rarely encounters the term in diagnosis. Dr. Theodore Janeway, while still at Columbia Uni-

versity, New York, published the first analytical study of a large series of clinical cases of high blood pressure in this country under the name "Primary Hypertensive Cardio Vascular Disease." This term he continued to use in his later writings until his death. But for its awkward length it is one of the most satisfactory terms yet offered in that it excludes all secondary hypertensions if such there be, and yet admits of sufficient variation in pathology to be clinically applicable in diagnosis. Sir Clifford Albutt's term of "Hyperpiesis", descriptive only of the dynamic phenomena of the disease in the early stages, is inadequate and indeed scarcely ever encountered in the literature of this country today. It is worthless as a diagnostic term.

The Hopkins School, in general, employs the term Cardio-Vascular-Renal Disease in essays on the subject, though recently Mosenthal of Hopkins and some other writers elsewhere have begun to employ the term "Essential or Benign Hypertension." The term is borrowed from the German of Volhard and Fahr who in 1914 described the benign uncomplicated type of high blood pressure. It is true that many hypertensive cases run a practically symptomless course for years, and to such it may be entirely appropriate to apply this term. It is to be sure a very acceptable term in naming the disease to the unhappy subject of a high blood pressure, and by suggestion is more useful in quieting his state of apprehensiveness as to his early dissolution than a multitude of words and explanations. As a medical diagnostic term it can have no great value or permanence. The pathology is that of the old Gull and Sutton type of arterio-capillary fibrosis of mild grade.

Since we know practically nothing of the physiologic mechanism which is productive of states of permanently high blood pressure we cannot deny that it is possible that this mechanism may be set in action by different causes or by various chemical substances present in the blood stream or elsewhere and thus may be a secondary condition. In accordance with this possibility and in harmony with our desire to ascribe a cause for all observed morbid symptoms we are accustomed to speak of arterial sclerosis, renal sclerosis, cerebral sclerosis as cause of high pressure. Yet one cannot doubt that there is a definite underlying unity in the various types of high blood pressure seen and that the earliest observed manifestation in all types is the hypertension itself. For a time the statement that a regional vascular sclerosis was the cause of high pressure was considered sufficient but there are many able minds who now hold the view that these sclerotic changes in the blood vessels are the result and not the cause of the hypertension. To this view were committed vonBasch and Jores in Germany, Huchard in France, Albutt and many others in England, Janeway in this country while Dr. Barker in 1917 at the Atlanta session of the Southern Medical Association expressed his views as follows:

"No matter how important a contributing factor to the hypertension the arteriolar sclerosis may be in advanced cases, either as offering a mechanical obstruction to the circulation in the kidneys (or in the viscera generally), or as leading to toxic vaso-constriction by injuring the kidney and causing retention of metabolic constituents that are normally eliminated, I can but think that the origin of the initial hypertension must be sought elsewhere."

Practically all authorities are agreed that the hypertrophied heart is to

be looked upon as the result of a persistently high blood pressure. The fundamental idea enunciated by Gull and Sutton that back of the disease we call chronic interstitial nephritis is a disease of small blood vessels and that the lesions of the kidney are secondary manifestations, was abandoned for a time but already in 1913 the work of Jores, Aschoff and Gaskell showed a return to this idea.

Harvey and Klotz experimentally maintained a state of high pressure continuously in young animals by placing them in an inverted position for three minutes over a period of 120 days and at the end of that time were able to demonstrate the production of marked sclerotic changes in the blood vessels. Again arterio-sclerotic lesions have been produced by repeated injections of such blood pressure raising substances as adrenalin, nicotin, barium chlorid, etc. Other evidence for the priority of the hypertension to the vascular sclerosis is seen in the fact emphasized by Sir Clifford Albutt that atheroma of vessels is especially common at those points in the arteries in which pressures are greatest, such as at bifurcations, and at narrow points and at dilatations. A number of autopses are on record of high pressure cases in which vascular sclerosis was not found, and it is a commonplace observation now-a-days, that many cases of sclerosis of the large arteries show no elevation of blood pressure.

The relationship of certain types of glomerular and diffuse nephritis to hypertension is perhaps more problematical as to which is primary in point of time. There are certain evidences which we cannot fail to take into consideration as tending to show a probable primary character of the hypertension. Thus all experimental attempts to bring about a persistent hypertension by direct injury to the kidney by removing large portions of the renal parenchyma or by ligating the renal vessels have been unsuccessful, and also that extensive destruction of the kidneys as by chronic infections and amyloid disease causing severe functional impairment of the kidneys do not lead to hypertension. Renal extracts have not been shown to exert a continuous pressure influence.

Given these facts then which represent the result of experiment and inductive analysis the question arises can we still look on high blood pressure as a compensatory phenomenon. It is not too much to say that if we consistently held to the view that an elevation of blood pressure represented in all its phases, systolic, diastolic and pulse pressure a conservative and compensatory reaction for the maintenance of efficient function in one or another organ, that we would make no efforts toward its reduction and give no advice which would tend toward such a result. It is to be realized, however, that heart and vascular system have reciprocal relations and functions to perform in the maintenance of efficient circulation of the blood and it is possible that a compensatory mechanism is in play in some phases of high pressure, the generally prevailing view being that cardiac hypertrophy and increased systolic pressure are compensatory to increased peripheral resistance as measured by the diastolic pressure.

So far, then, as research and study have led us, it is recognized today that a state of high blood pressure which is permanent represents the first stage of the disease which we may call after Janeway Primary Hypertensive Cardio-Vascular Disease or after Barker Cardio-Vascular Renal Disease.

What then is the cause of high blood pressure? The answer is, of course, that we do not know. Certain general etiological factors have been under suspicion, of course, as various pre-existing diseases. Warfield in 1917 studied 500 cases of arterial sclerosis with relation to the infectious diseases as possible causes. He arrived at the conclusion that the general infections played no part in the etiology of this condition.

Syphilis: Janeway in 1916 studying the possible relation of syphilis to high blood pressure found a lower incidence of positive Wassermann's in 320 cases of hypertension than in all the cases of his series as a whole. Stoll in 1915 concluded from the study by Wassermann's and luetin tests of a fairly large percentage of cases that syphilis was the underlying factor in a much larger percentage of cases than had previously been realized. The luetin test was shortly afterward discredited however. Walker and Haller in 1916 found less than 7% of positive reactions in chronic nephritis with hypertension. Levison of Toledo in 1916 studying 18 cases of syphilis with high blood pressure concluded that anti-syphilitic treatment cannot be expected to reduce hypertension in syphilitics who have also high blood pressure though admitting that occasional reductions may take place.

Focal Infections: It is most important to correct all foci of chronic infection in any disease. However, Elliott of Chicago, studying 68 cases of high pressure with relation to focal infections, was unable to find any reason to think that hypertensive vascular disease bore any relation to focal infections. In 1917 Strickler of Atlanta reported one case of hypertension cured by the removal of dental focal infections, and stated that he could quote others due to Rigg's Disease and sinusitis. Apart from this one case I have failed to find in the literature of the past ten years any cures of hypertension ascribed to the clearing up of focal infection. No reference is made here to the cure of nephritis in general by eradication of focal infections, for brilliant results were reported last year by Hunt of New York in this connection.

Foods and Intestinal Intoxication as a cause are indeed under suspicion and must continue to be. There is much circumstantial evidence to implicate the intestinal tract but nothing very definite has been worked out beyond the fact that various substances of a pressor nature have been isolated from the intestinal current, as well as substances which have a damaging effect on the kidney substance.

CLASSIFICATION

As one studies cases of high pressure carefully it is impossible to avoid the tendency to classify them into various groups on a clinical basis. If we await the autopsy in order to group them on an anatomical basis we lose an invaluable guide in treatment. Dr. Cabot has said that treatment must often be on a symptomatic basis.

Classifications have been advanced by Stone, Stengel, Barker and others. From the clinical point of view as a guide to treatment and prognosis the classification of Warfield has served us best in the differentiation of cases.

By this classification, Group 1 is the so-called chronic interstitial nephritis, characterized by marked impairment of renal function and the predominance of renal symptoms, polyuria, nycturia, low sp. gr., constant traces of al-

bumen in urine, renal type of low grade edema. The phthalein output is low, there is retention of urea and creatinin. Both systolic and diastolic presure are high (200; 120-140) and there may be a high leucocyte count. The heart is enlarged to the left. At autopsy the type shows small red coarsely granular kidneys with thin cortex and adherent capsule. Death in this group is by uremia most often or by cardiac failure.

Group 2 include cases often found by accident. They are large fleshy robust apparently healthy people who with years of freedom from ailments of any kind suddenly appear in the physician's office. On examination and questioning renal symptoms are absent. There is neither edema, polyuria nor nycturia. The urine is normal and renal function is normal or nearly so. Blood urea and creatintin are only slightly increased if at all. There is marked cardiac hypertrophy. The blood pressure is very high. There is high grade left ventricular hypertrophy and slight enlargement and dilatation of the aorta. At autopsy the kidneys are not contracted, the cortex is not decreased in size and the capsule strips readily. Microscopically the principal change is a diffuse fibrosis of the arterioles with only slight changes in the epithelium and glomeruli. Death is usually by apoplexy or perhaps by cardiac decompensation.

Group 3 is found typically in well nourished individuals who are overweight or who have been overweight at some previous time of their life. They present no renal symptoms. There is no polyuria and no nycturia and the urine is nearly normal. Phthalein output is only slightly reduced, and blood urea and creatintin are only slightly elevated. The blood pressure picture is characterized by a high systolic pressure, and by a nearly normal diastolic with a pulse pressure higher than that seen in either of the other two groups, equal to or greater than the diastolic pressure. The heart is much enlarged. This type in our experience is particularly often found in women over fifty years of age, and their symptoms are essentially cardiac with palpitation, and a tendency to anginoid pains. Often gaseous distention of the abdomen is one of their most chronic and annoying symptoms. Death in this group is by gradual cardiac decompensation. At autopsy there is high grade hypertrophy of the heart and the kidneys are said to be enlarged with cortex of normal thickness. I say said to be enlarged, for I have not had the opportunity of obtaining an autopsy in this type of case, though it is a common clinical type to find. Microscopically the chief changes are again found in the arterioles with but minor changes in the epithelium and glomeruli.

These three groups will, I think be readily recognized by every clinician. Is it necessary that they should be differentiated and how may they be differentiated? Above all it is necessary that high blood pressure cases should be properly studied and grouped. Because we have no specific remedies these unfortunate people are too often passed over with but cursory examinations and with the brief hasty advice to cut out all meats from their diet and not to exert themselves.

Janeway said in 1915 "To tell every patient with alhuminuria or hypertension to stop eating red meat, or worse still to go on a milk diet is evidence either of ignorance or inexcusable laziness. To group properly cases of hypertension requires first of all a careful study of renal function by obser-

vation of daily water intake and water output, phthalein tests, estimations of blood urea and creatinin and chlorides and a careful study of blood pressure reactions and cardiac function. With increasing experience one may often forecast from the symptoms and pressure reactions the group into which a case will fall when carefully studied later. However, such a method of classification without a study of renal function is mere guess work.

It is nothing less than a moral duty to work out thoroughly these cases and to give them appropriate advice and treatment. In cases of group 1, diet will be vitally important, requiring the reduction to a reasonable degree of their protein intake, a diet yielding a basic ash, and purin free. In group 2 the treatment will aim above all to avert a cerebral calamity while in group 3 every care and attention must be given to avert cardiac decompensation. The wise pilot is he who focuses his attention on the particular rock toward which the ship is drifting and not those which lie far from the course of the ship.

MECHANISM OF CONVULSIVE MOVEMENTS OF THE ORBICULARIES AND FACE, AND THE MANNER OF THEIR REMOVAL.

Dr. Tom A. Williams, Washington, D. C.

Corres. Member Neurological Society of Paris, etc.

We are all familiar with convulsive movement of the face due to chorea. It is physical, due to cerebral infiltration by organismal products. Another type of convulsive movement of the face, of physical origin, due to encephalitic irritation, has been seen by some of us in cases of encephalitic during the recent epidemic. The mechanism of that is also simple. Another type of convulsive movement of the face of physical origin is that of orbicular spasm, in which the eyelid twitches. That, again, is due to irritation of the facial nucleus, of encephalitic origin. The management of a disorder of that kind is laid down in the textbooks. There exists quite a different type of convulsive movement of the face.

For instance, a woman of fifty was sent to me some years ago by Dr. Heffron, of Syracuse, New York, because of a grimacing of the face. At the same time this woman's head turned toward the right. She had seen an eminent neurologist in New York, and he recommended that the sterno-cleidomastoid muscle be sectioned. This done, I need not say that no benefit was obtained. She was later sent to me and the discovery was made that this movement had nothing to do with any physical disorder, but was a movement directed toward an end, which was brought about not from a disturbance of the sterno cleidomastoid muscle, but the whole mechanism of turning the head and pulling the face to the right was involved. What was the stimulus? It was found to be a psychological one. It was found that the woman had a niece with whom she had been in the habit of walking, the niece always walking to the left of the aunt. The niece was about to be married. So determined was the aunt not to consent to this that she could not help turning her head away from the niece, so painful was the idea of her prospective marriage to one of a class of foreigners who had always caused misery to their wives in the many instances she knew.

Another case of like character was a young woman in Washington whose neck turned because behind her sat a woman with whom she was always trying to make up a quarrel.

Another case of the kind occurred this Spring, a lady from South Carolina, was sent to me by an ophthalmologist because she could not open her eyes and had not been able to do so for two years. She could not go on the street, could not conduct her household affairs, could not read, and could scarcely write. Also she had a high blood pressure and looked like an old woman. Altho I recognized the psychogenetic nature of the condition, I was unwilling to undertake treatment because of her condition and age. However, examination showed that there was no serious arteriosclerosis nor kidney disease. She was a much more intelligent woman mentally than she looked. First we found out the cause of this effect. It had come on during the war, when she had great responsibility and anxiety. Why responsibility and anxiety caused the convulsions of the face which caused her eyes to close so tightly was that when a young girl she had formed the habit of closing her eyes whenever any painful sight or even thought would occur. It seemed more bearable then. When this occurred she tried to abstract herself, which she did by not seeing what was before her, so she closed her eyes. It was a manner of withdrawal. This had become a habit but had never given any trouble until the great distresses of the war. Then the eyes remained closed. At the same time her vision began to age, so she went to an ophthalmologist for the fitting of glasses. But the constant closing of the eyes produced an effort to keep them open, which led to spasmodic movements. So she was sent to another ophthalmologist, who told her that the glasses she had were wrong and gave her some others. Naturally, no good was done, because the trouble was not in the vision but in the mind. So she became worse and worse. Explanation and re-education enabled her to go home in a month vastly improved. She was able to read and write, and go out alone.

Another, a man from Wilmington, tried to keep his face straight by chewing his lips. He was a sea captain and had great responsibility during the war. Finally he got so that he could not open his eyes at all. He too was much improved.

The last case is that of a Washington man who, during my absence in France, was sent to a famous clinic. There he was seen by ophthalmologist, neurologist, psychiatrist, internist, serologist, and all sorts of examinations were made, nothing objective being found. He could not open his eyes. This man when I saw him was in a stage of phobia in reference to his eyes. He feared that he was going to lose his sight. He was so terrorized by his visits to different doctors and hospitals that he could not get his eyes out of his head. The phobia on which the whole thing really depended had been reinforced by injudicious management, which was not based on a knowledge of the cause. The genesis was interpreted as follows: The conjunctiva had become irritated by considerable driving along dusty roads in an automobile in the glare of the summer sun; in conjunction with the short sleep and the conviviality entailed by late hours. The protection of the eye-balls by lowering the lids was the consequence. In the manner of the tics, this physiological response eventually became a psychological habit. This habit the pa-

tient might have shaken off as he had done previously with other tics; but in consequence of repeated medical opinions expressed during six weeks before him by distinguished men in a famous hospital there was added to the habit, the phobia of the inability to open the eyes and the fear of loss of sight, and, with it, earning capacity.

These cases all illustrate the fact that convulsive movements of this kind depend upon mechanisms of psychological nature. They originate in an uneasiness. That may be of physical origin. There may be some general condition toxic like Bright's Disease, high blood pressure or endocrine, as in dysthyrodia and dyspituitarism.

For example, a physician's daughter, aged eleven years, was brought because of loss of interest in her lessons, of which she had previously been very fond, grimacing of the face and eyes in spite of all correction, equivocation and fibbing in attempts to evade her duties, and greediness amounting to gluttony. She had always been a stout child, but had become enormous during the preceding year or so.

Exploration of a possible psychological cause for this change of behavior was fruitless; so psychomotor exercises were begun for the facial tics. The only effect of these was to arouse the patient's resentment; they were not perserved with. Some time after, great somnolence manifested itself, the child becoming very lethargic and even dropping off to sleep in the middle of a task or at the table for a few moments. This directed attention to the function of the pituitary gland so this was immediately explored by the levulose test. As this showed great increase of the tolerance of the system to large amounts of sugar, it was decided that the pituitary gland was functioning insufficiently; great increase of weight, torpor, psychic inadequacy and its attendant changes in behavior being symptoms of lack of pituitary secretion. Feeding with increased doses of pituitary gland was at once begun. The child recovered completely in a few months, and after the onset of puberty was able to dispense with the pituitary gland; and now, seven years later, is active and comparatively thin.

Whether physiological or psychological the patient is made uneasy, and so he changes position to get relief. On the other hand the urge may be purely psychological, due to worry, anxiety, etc. It is the business of the physician to find out the cause of the movement so that he can overcome it. The first step is to find out exactly with what you are dealing. The second is to teach the patient to perform movements in a controlled fashion.

Some ten years ago I succeeded in healing some cases of the kind, but also failed on several. I only discovered in the last few years that we failed by pushing exercise too rigidly. The greatest discretion is needed to prevent further constraint being developed by the patient. Much patience is needed. When that is done, I think that nearly all of these cases should get rid of their convulsive movements. But that must depend also upon the re-education of the patient's attitude toward the difficulty, because the condition is fundamentally psychological.

ANAEMIA, WITH THE REPORT OF TWO CASES, ONE SECONDARY AND THE OTHER PRIMARY.

Dr. K. C. Moore, Wilson.

This paper has principally to deal with the report of two cases of anaemia. I am reporting the first case, a case of secondary anaemia for two reasons, first that it taught me some very valuable lessons in making a diagnosis, and second on account of its being a very interesting case.

Mrs. W., age 22, married, came to me on account of general weakness, numbness in the extremities, shortness of breath, palpitation and occasionally pain around the heart, loss of weight, sleeplessness and complained of being very nervous. She had been going backward for about two years. Her loss of weight was very gradual, had only lost about twenty pounds during the two years. She had been married for two years to present husband. First husband died after living with her only a few months. First husband was supposed to have died of tuberculosis. She has had no children by either husband but has had two mis-carriages during her second married life and is now five months pregnant. She has suffered with a great deal of nausea during this entire pregnancy. She has had two abdominal operations during the past three years. The first about three years ago for appendicitis, the second about twelve months ago for a large right cystic ovary. She had no complications with either operation, wounds healed nicely.

Examination: The patient is very pale, the conjunctiva and mucous membranes are very pale, her teeth are good, tonsils are of normal size and appearance, there is no glandular enlargement in the neck, the chest is thin, ribs rather prominent, breasts are very small, showing an atrophy rather than an enlargement. On inspection, palpation, auscultation and percussion the lungs are normal. The heart is of normal size. There is a low systolic murmur heard at the base and is not transmitted. With this exception the hearts sounds are normal. Rate is rather fast, 90. Abdominal examination is negative with the exception of an enlarged uterus reaching to the umbilcus. Patella and eye reflexes are normal.

Blood pressure at this time was 110, urine normal, both chemically and microscopically. Blood: Hemoglobin 65, RBC 3,400,000, WBC 6,700. Diff. Poly 59 large lymph small lymph 24 and eisin 2. The red blood cells were fairly constant as to size, they showed a distinct diminution of coloring matter. There were no nucleated reds, very slight poikilocytosis. This patient was put on tonics and digestants with no improvement. I questioned the husband very closely as to venereal diseases. He admitted having had Gonorrhoea, but flatly denied ever having syphilis. I knew the people well, they were of the better class of people, and although I suspicioned syphilis I could not make myself believe it strong enough to have a Wassermann made. This is where I made my mistake. The patient went from bad to worse as the pregnancy advanced. She began to show albumin and casts in the urine, the blood pressure slowly began to rise and the blood condition became worse. Finally, I suggested consultation and the consultant made a Wassermann which showed four plus. She was then put on mercury inunctions daily and fifteen drops of the syrup of iodine of iron was given after each meal. She was put to bed and kept there on practically a protein

free diet. Her condition improved wonderfully. Labor pains started up just a little after the eighth month, and she had a normal delivery of a dead baby. The inunctions were continued for two or three weeks and then small doses of neo-salvarsan were given weekly. After three doses the Wassermann was negative and has remained negative until the present time. She has given birth to a normal child who is now two years old. The kidney condition has entirely cleared up, her blood is normal, and she has gained about twenty-five pounds.

There was never at any time anything suggestive of syphilis about this case with the exception of the miscarriages. A wassermann of the husband was negative. She has never had any eruption of any character. This case has taught the lesson that you can never be sure of the absense of syphilis in any one until you have thoroughly investigated. I have made it a rule since this case came under my observation to take a Wassermann of every case I examined, and never be sure of any thing until I had looked for myself.

The second case I wish to report is a case of primary anæmia.

Wm. W., male, 61, married, wholesale merchant and farmer. First examination Aug. 27, 1917. At this time patient came to me complaining of indigestion with a severe diarrhoea. (A year or two previously I had examined this patient for life insurance and turned him down on account of a Chronic Bright's Disease, at this time he had a blood pressure of about 180). Until he began to suffer from the indigestion and diarrhoea he had always been in good health. There was nothing else of any importance in the history at this time. Examination: Patient is well nourished, weight, 169, muscles are well developed, tongue is a little red, especially at the tip, teeth and gums are in good condition, there is no glandular enlargement in the neck. Examination of the chest shows the lungs to be normal. The heart is slightly enlarged, apex extending to left and below the nipple line. Its sounds are normal. The abdomen is some what distended and slightly tympanitic; on palpation there are no tender areas. The liver and spleen do not show any enlargement. Patellar and pupil reflexes are normal.

Stomach analysis: There is no free hydrochloric acid, the total acids are much diminished, lactic acid negative, Microscop. examination negative.

Blood: Hem. 80% red blood cells 3,336,000, whites 7,800, Differ. Polymor. 60, small lymph. 22, large lymph, 16, and eisin, 2. There is a very large variation in the size of the red cells, some of them being two or three times the size of a normal red cell and others being a great deal smaller. There is a marked poikilocytosis—Wassermann negative.

Urine: Slight trace of albumin, sugar negative, acid, and a few small hyalin casts. Blood pressure 135-90.

Stools are watery with a great deal of undigested food particles, repeated examinations showed the absense of occult blood.

A diagnosis of Primary Anaemia was made and dilute hydrochloric acid, arsenic in the form of Liq. Potass Arsenit. was prescribed. The diarrhoel condition improved for the time being and the blood remained fairly stationary through the winter of 1917 and 1918. In the spring the diarrhoel condition returned, and the anæmia began to become more marked. Sodium cacodylate was substituted for the Fowlers with no improvement. By June

1918 the red count had gone as low as 2,500,000 and hemoglobin to about fifty-five percent. At this time I advised transfusions. Not being willing to trust myself with them, I advised him to go to Dr. Barker of Baltimore. I carried him there in July and his blood count on arrival, about three weeks after my last count was Reds 1,792,000 hemoglobin 50%. He was given a transfusion of 2500 cc. of blood which raised his count to red blood cells 3,000,000 and hemoglobin 75%. He remained in Baltimore about six weeks receiving two other transfusions, and returned home about the middle of August with a count red blood cells 4,800,000 and hemoglobin 100%. He was greatly improved in every respect. Was troubled with diarrhoea very little, weighed 178, and looked after his business during practically all of the fall and winter. In March, 1919, he reported to me again, saying that he had not been feeling so well during the past few weeks. At this time diarrhoea was very severe, and blood examination showed as follows: Red blood cells 3,000,000 hemoglobin 70%. I advised him to take further transfusions before he got down so low. He became rather despondent and said he would let me know. I did not see very much of him any more until June, when I was called to his home. At this time I found him very weak, the color of a lemon, suffering a great deal with dizziness and numbness in the extremities. Blood exam. as follows: Red blood cells 750,000 and hemoglobin less than 30%. I told him that if he didn't have some transfusions and as soon as possible that he would die. We sent him to Baltimore again. On this trip he received seven transfusions in eight weeks time and returned to Wilson with a count of red blood cells 3,100,000, hemoglobin 80%. He did not feel as well from these transfusions as after the first. Remained very weak and on Sept. 3rd, had dropped back to 2,022,000. I again advised transfusions and on Sept. 14th transfused 500 cc blood, Sept. 21st, 500 cc, Sept. 28th, 650 cc, Oct. 5, 1200 cc, 12th 1000 cc, 19th 1000 cc, Nov. 16th, 350 cc, and on Nov. 30th, 1200 cc. This was the last transfusion given and the following are counts made since the beginning of the last series of transfusions: Sept. 22, 2,352,000, Sept 27, 2,104,000, Oct. 6, 2,920,000, Oct. 18, 3,472,000, Oct. 27, 3,048,000, Dec. 10, 4,236,000, Jan. 27, 1920, 3,368,000, Feb. 20, 3,992,000 and April 12, 2,280,000. During this past winter he has been fairly comfortable, has been up and about most of the time, has suffered very little from the diarrhoeal condition. He has maintained his weight pretty well, weighs now 168. For the past two or three weeks he has been losing ground very rapidly and is very much in the need of transfusions. I intended to give him another transfusion the past week, but have not been able to get a sufficient amount of blood worked up, so he will be transfused again the latter part of this week. During the intervals between the transfusions he has been getting arsenic in various forms. I believe this has helped to hold his blood up, but I have never been able to influence it in the least when it was low with anything except blood.

This case has been kept alive for nearly two years with blood. Other remedies were tried very extensively on him without results. The cost of his living these two years has been rather expensive, but I am sure that he feels that he has gotten his moneys worth, because he is still ready and willing to take the transfusions, and does not hesitate to pay for the blood.

The method used in this case was the citrate method. This is very simple and there is practically no danger if the bloods are properly matched. To each 250 cc blood, nine grains of chemically pure sodium citrate dissolved in one ounce of normal salt solution, made with freshly distilled water, is added and stirred constantly while the blood is being drawn. The blood is drawn by inserting a thirteen to fifteen gage needle into the medium basillic vein, the arm is corded above and the donor instructed to open and shut the hand. I prefer to use the thirteen gage needle as there is less likelihood of the needle becoming stopped up. It is also a very good idea to pin the vein to the skin with a fine combric needle to prevent it from rolling about. It is also easy to reinsert the needle when pinned, if from any reason, it should slip out. It is best to draw the blood in the same room with the recipient, and keep the vessel covered with a hot towel to keep it warm. This very often prevents a chill. I think it is very important to keep the blood warm. Where the blood has been transfused quickly and has not been allowed to become chilled I have had practically no reactions.

The most important part of the technique in giving a transfusion is in having the bloods properly matched. This is a very simple procedure and any one can do it who knows how to use a microscope. The method I have used is as follows: One drop of each the donors and recipients blood is added to about one cc of a one and one-half percent solution of sodium citrate in normal salt solution, each blood of course, in a separate test tube. This gives us the blood cells. Into a centrifuge tube about one cc of blood, from the donor and recipient are put aside and allowed to coagulate. After coagulation takes place the clot is removed and the serum is run for a few minutes in the centrifuge to separate all the cells. A hanging drop is then made of a drop of the donors serum with a drop of the recipients cells, and one with a drop of the recipients serum with the cells of the donor. The slides are looked at with a low power every four or five minutes and the slides shaken to insure a thorough mixing. If the bloods match the cells in each slide remain evenly distributed, if they do not match the cells in one or both slides become clumped together. If agglutination does not take place within thirty minutes the bloods match and are safe to use. There are four blood groups, and if we have a known group 2 blood it is easy to group any other blood by testing against this blood.

Transfusions are becoming more widely used every day, with an accurate matching system the dangers have been reduced to a minimum. They are not only indicated in the treatment of primary anaemia, but in the treatment of any severe case of secondary anaemia after the exciting cause is removed. They will save many lives in surgical patients who have suffered from hemorrhage. A transfusion is an absolute specific for an oozing hemorrhage. A patient can hardly bleed to the point where transfusion will not save, providing it is properly matched and given while there is still life. In these cases the greatest source of failure is in not giving enough blood.

The bloods of brothers and sisters usually match, but this is not always true. No case should be transfused without first doing an agglutination test. The donor should be a healthy person, and a young person is always perferable to an elderly one. No person should be used as donor until a Wassermann has been made and found to be negative.

DISCUSSION OF DR. MOORE'S PAPER: ANEMIA.

Dr. R. A. McBrayer, Sanatorium: One thing that I would like to ask the doctor is what kind of Hemolytic anæmia the man had? Another is whether he has ever employed the blood pressure apparatus in taking blood from the vein or in putting blood or medicines into it. In doing this I take the blood pressure, and after ascertaining the systolic, diastolic and pulse pressures, divide the latter by three. Now substract this quotient from the systolic reading. This gives the pressure, when applied, that will allow the arterial blood to come thru the arm band and will at the same time obstruct the venous return which means that you will get a permanently distended vein and the flow therefrom will be constant and under pressure which adds much to the ease in which blood can be withdrawn from a vein. Equal advantage is in intravenous injections for as soon as the needle enters the vein (the blood which is under pressure) the blood begins to flow into the syringe. Immediately an assistant opens the air valve on the blood pressure apparatus and there is then in the vein an increased and more rapid flow centrally which is very desirable in such work.

Dr. Moore, closing the discussion: Dr. McBrayer's point about the blood pressure is very important. I have never used the blood pressure instrument, but have always been careful to see that the pulse is not cut off when the arm is corded.

The case I mentioned was one of pernicious anemia.

ARTERIAL TENSION AND ITS CLINICAL MANIFESTATIONS.

Dr. Charles H. Peete, Warrenton, N. C.

Honored President, and Gentlemen of The Medical Society of The State of North Carolina:

In venturing to make a few remarks on Arterial Tension I recognize at once that I am entering into a field of extreme extent, and one that has been, and is being explored and investigated from every angle. And still we are confronted with no problem of greater importance; and I am speaking not to air any views or pet theories of my own, but to get the subject under discussion in a simple way, and see what the genlemen of this great State can advise in the way of prevention and treatment.

Arterial Tension, high or low, is really an abnormality of circulation; it is a condition; it has a cause; it does not exist as an entity with no beginning. It has been found from time immemorial. But it is *being* found in greater frequency as the years roll by. One cause of this may be that having been awakened to the fact we look for it; and we have greater diagnostic facilities. But the fact remains that there is more arterial disturbance than there has ever been. I take it that it is the pace of present-day life, or living, a faster if not a fast, life, that is the chief cause of arterial abnormality. The tension may be high, or it may be low. The high pressure man struggles and hustles and keeps up with life; the low pressure man cannot keep up with the pace, and like a toddling infant he stumbles and falls as he tries to advance; but the high pressure man has kept up with the

pace until he gets exhausted, or nearly so, and then wearily falls into the arms of the ever-ready medical friend and wonders why he is tired or feels wrong. The queer point is that they never think their manner of life or struggle causes their condition:—I do not here refer to the introspective neurasthenic. Life now is a competition, a race. And one engaged therein feels it, and the stimulation of it. The man who lives his life with an even mind and an easy attitude of life is seldom bothered with arterial abnormality. But he is a rare person indeed who does not permit the cares and worries of life to disturb his equanimity of spirit. It is my opinion that this mental attitude and *lack of* knowledge of the rules of proper living are the chief causes of arterial abnormality as we see it nowadays. I tell you frankly, gentlemen, it is appalling how little the average man knows how he should live. I mean in regard to food, rest, sleep, work, recreation, and mental activities. Mr. Business Man always asks how to run his automobile, how to run his factory, studies minutely how to run his business; but he practically *never* asks or studies how to use the wonderful machine God has given him so as to keep it in the best shape and repair. The knowledge of the rules of right living, and their observance, is both the preventive and treatment of our subject; and it is the key problem of it. But we get the man when he is about down, or feels the wear; and we have an impaired mechanism to make over,—a difficult job. We all know about the "type" of man with arterial degeneration; we know that improper eating *and drinking is a great* cause of it. Right here though, I want to say that it is not always too much food; the correct preparation and the correct foods are too seldom used, and faulty foods, limited number of foods, and faulty cooking, will cause arterial degeneration just as quickly as other toxic causes and do it more insidiously. There are the multitudes of toxins, syphilis, and what not, that are responsible; and there is no need to enumerate them, if one could. Nor is it necessary to more than mention worry, business pressure, lack of sleep, lack of recreation,—all these with improper eating, improper foods, and the toxic causes are the reasons of this degeneration. I do not believe that work *per se* is a cause; but work *and* worry is a great cause. We find the increased tension in any person, man or woman; probably it is more frequent in men, but it is getting more prevalent with women. Thinness or stoutness makes no difference. I believe one outstanding feature we all recognize is that increased pressure is an abnormality of advancing years, although often we can measure a man's age better by the sphygmomanometer than we can by the number of his birthdays. Nearly all show vertigo; many have a heart so strong as to shake the whole body or head when they are sitting quiet. There is the angina not only of the heart or aorta, but of the leg, abdomen, or arms. And the feeling of oppression in the chest, all sorts of digestive disorders, with weakness after eating by giving the heart more exertion. Often a woman cannot arrange her hair or raise her arms. There is the tendency to fall in certain directions; the various paresthesias, and the hot and cold flushes as well as the inability to keep warm or to get cool in hot weather. The kidney symptoms are too well known to need comment. Often tinnitus is the first symptom that brings the patient to the doctor, and like the vertigo, it is one that is apt to remain. I believe the fat high-tension man suffers more than the thin; he can't get about so well, nor can he arrange his position for comfort as well.

Under treatment he often gets thin, but it is unwise to try to reduce to thinness a man who has *always* been stout, he is very apt to be made exhausted. In regard to the low pressure subject we are apt to find him a thin person, phlegmatic, with little energy. He is apt to have a hereditary condition, for his parents or their family are apt to have shown the same characteristics. He is prone to have abdominal ptoses of all sorts, and piles; as well as digestive disorders and melancholic mental views; he is apt to be a pessimist. He fatigues easily and does not like exertion; also he passes into a neurasthenic state very quickly. I have never been able to find any definite ascertainable cause for low blood pressure, and I have found it in the young adult as well as in the old. It would seem almost to be a part of the individual or his make-up. And from observation I have been forced to come to the conclusion that in spite of his ptoses, dyspepsias, etc., he is apt to be long lived. One thing is that he never has energy enough to overwork himself; and his heart beats so slow it gives itself plenty of time to rest itself. And I have never found any treatment, and I have given them all known cardiants, tonics, baths, massages, diets, ets., that would alleviate. I do not advise office life however, but ask them to go to the farm if possible.

I shall not speak of medicine for the high-tension man; we all have tried the whole Pharmacopeia and have made no definite cure. We have to try and relieve the symptoms, and we should. But the best plan is to put the patient to some likable occupation with moderate bodily work, and get him into a mental attitude that will prevent worry, and instruct him how to live properly with food, sleep, rest, recreation. I do not believe we should take proper work in right amounts from the patient; it leaves his mind too much unoccupied; but at the same time he must learn that it is just as important to rest with relaxation as it is to work. One type of hypertension I fear has been injured by too much solicitation on our part is the big man who has what seems to be essential hypertension; in other words the pressure of 170 to 180 seems to be really his measure. I have seen such men go for years with no urinary or other damage. But I do think such cases ought to be properly warned, directed, and observed, but not overly coddled. I should like to get an expression from this assembly what it thinks in regard to the use of tobacco in hypertension. I have never been able to decide the question to my satisfaction. We see tobacco users live very old. I cannot say I think it causes hypertension; but I do think the continued use of tobacco once hypertension is established does not tend to reduce the condition.

TOXIC ARTHRALGIA.

Dr. O. Edwin, Finch, Apex

By this condition I mean, Painful Joints, with but slight swelling, and usually an associated myositis, which is more commonly known as "rheumatism." In some cases a mild infection of the joint may be associated. The prime etiological factor being toxins, produced directly or indirectly by bacteria at some distant focus or foci. In this paper I do not intend to discuss the various locations in which foci of infection may be found, capable of producing toxic arthralgia.

Toxic arthralgia is found more frequently involving the shoulder, sacro-iliac, hip, knee, cervical spine, wrist and ankle joints. Rarely involving the lesser joints—toes and fingers. It is also rarely symmetrical. If more than one joint is involved, the hip of one side and shoulder of the other or vice versa.

The onset is usually insidious. Pain the chief symptom which is but rarely definitely localized to the joint, usually radiating in the line of muscle and nerve distributions. For instance, if the hip is involved, the pain usually radiates in the course of sciatic nerve. On exercise the condition is made worse. Pulse and temperature are but rarely affected.

The areas in which foci of infection may be found, in order of their importance are—1st, teeth, 2nd tonsils, 3rd gastro intestinal tract—a key to which may be expressed by three "T's", teeth, tonsils and 'testines. By the tonsils, I mean the naso *pharynx*.

The teeth: Dr. Mayo recently said, "The next great step in preventive medicine will come from the dentist,—will they take it?" Six years have elapsed since Billings published the important fact that septic foci, even when small, are a source of infection when transmitted by the blood stream. Oral sepsis has come into prominence only recently in connection with what is called focal infection. The particular pathological condition found in the mouth, of which we are especially concerned are:

(A) Pyorrhea or supperative gingivitis.
(B.) Alveolar abscesses.
(C.) Infected pulps.
(D.) Apical abscesses.
(E.) Discharging sinuses and
(F.) Granulomas .

The most important factor about these conditions are that for years they drain their insidious toxins into the alimentary canal, lymph and blood channels without giving the slighest symptom that would cause the patient or physician to suspect their existence. Even should they produce symptoms, when you first mention such a condition as the source of trouble, being in the teeth, the patient will declare you are insane for he believes every tooth in his head to be as sound as a silver dollar. Those lesions that are more or less enclosed are the most dangerous, for here the toxin is drained into the circulation and sooner or later, alone or in conjunction with some predisposing factor, they will break down the resistance of the patient and produce toxic arthralgia and other systemic ills too numerous to mention. I have in mind a white male, age 45, who came into my office on crutches. He complained of severe pains located in the shoulder and hip joints. Under the care of another physician the salicylates had been used with no degree of improvement. On examination of his teeth I found pyorrhoea involving two lower molars and three lower incisors, with free pus easily expressed from around these teeth. Without prescribing, he was referred to a dentist who extracted the five teeth, and rendered surgical treatment. In two weeks time the patient had obtained complete function. This case is not the typical, to the contrary his condition was atypical. It is in the typical cases that we find those obscure infections of the teeth, particularly

blind abscesses and pulpless teeth; for they require our most diligent work. In fact the diagnosis of oral sepsis is not a one man's job, particularly for the physician. It is necessary for the physician, dentist and xray man to work together. The dentist taking the clinical and xray findings into consideration, is alone qualified to make the final diagnosis. I make it a rule to but rarely advise a wide and complete extraction of all teeth without first invoking the aid of the xray man. So often we are prone to make a superficial examination of the teeth and refer the patient to a dentist, with instructions to leave not a tooth. Almost as often we fail to get results with these cases, for more than one reason, but one particular, is because we have not made a diagnosis with the aid of the xray man and a dental surgeon. Taking for granted that our diagnosis is correct we fail to obtain results because there may still exist pus pockets in the gums or alveolar processes, which mere extraction of the teeth has failed to drain. The dentist should lightly cureette the alveolar pockets and break up any shell that may be protecting the pus pockets. Even though extraction has been complete in some cases and no results obtained, you should have an xray picture made of the alveolar processes for the presence of pus pockets. It is my honest conviction that a part of the dental profession are responsible for a large percentage of oral sepsis by the insane practice of destroying nerve and blood supply, i. e., removing the pulp, treating root canals and allowing pulpless teeth to remain. Drs. Rosenow, Billings and Hartzell contend that pulpless teeth are a menace to the human system, and should, without exception, be removed. A pulpless tooth is a devitalized tooth, (Dr. A. D. Black reports that 47% of devitalized teeth have alveolar abscesses; others report as high as 80%.) When the pulp is removed from a tooth its dentin becomes dead dentin in the same sense that bone in which the bone corpuscles have been killed is necrosed bone. How many of you would like to have the surgeon leave dead bone in your osteomyelitic femur or tibia as the case might be? Recently, I inquired of a dentist why it was that he continued to practice such dentistry. He replied: "Should I insist on removing those teeth the patient would discharge my services and seek a dentist who would give "treatments" and encourage the patient to retain his so-called sound teeth." So long as such an attitude as this exists in the dental profession just so long will we continue to have septic oral conditions and innumerable systemic ailments traceable to such foci.

It is not the removal of a sound tooth we desire, therefore, a word of precaution is not amiss. Teeth should never be removed unless the indications are clear. We have passed the area of ovariectomy, appendectomy, with our patients, be careful what we promise them, save serviceable teeth whenever possible. It is not the counsel of the radical, nor the ultra-conservative dentist that we desire, but a happy-medium-fellow who is willing to launch out in mid-stream and by the grace of God and the aid of the Xray do that which he feels and knows to be good dental surgery. Having found such a dentist sustain him in his efforts to educate the public in oral hygiene.

Tonsils or Nasopharynx: It is to the faucial tonsils that we owe an apology for so many of our sins of misdiagnosis. I am not referring, necessarily, to those tonsils that are enlarged and obstructive; it is the

infected tonsils; whether it be enlarged, obstructive or embedded. I know of no better way to emphasize this than by relating, in a superficial manner, a case record—Miss S., white, aged 19, came to me complaining of pains in her left shoulder joint, and the joints of her right knee. She had been the rounds of general practitioner, electrotherapeutist, stomach specialist, etc. Examination was negative with the exception of her tonsils. She had a pair of embedded and infected tonsils. From the cryptic areas free pus could be easily expressed. She was referred to a throat man who removed her tonsils under ether. In three months time from the date of her tonsillectomy, she was free from all pains. Had good digestion, appetite and color. During this time she gained thirty-one pounds. Previous to her operation she stated that she could not digest or retain but very little food, for this reason she consulted the stomach man,—I cannot understand how the somach specialist could pass a stomach tube down her throat and not see (or smell) that he was slipping his tube past the primary into the secondary condition. He finally informed her to go home and not return for further treatments, as he could not benefit her condition. I could not help but admire his frankness after he had given her two months stomach tube treatment with its associated scientific fractional test. Dr. Thos. McCrae says "More of us make our mistakes by not looking and feeling—not that we do not know." In our effort to determine if the tonsils are at fault it is very necessary that a close and pains-taking examination be made. Merely using a tongue depressor and making a superficial *inspection is not an examination.* It is necessary to use a probe guarded with cotton and search out the crypts, and other obscure areas of the tonsils. Have the patient make digital pressure at the angle of the jaws, which will push the tonsils nearer mid-line, then grasp the anterior pillar with a tonsil retractor, make pressure with a blunt instrument over the body of the tonsil. In many instances pus pockets will be identified that would otherwise be unobserved. Get the idea out of your mind that the wall bracket lamp and head mirror are intended only for the ear, nose and throat specialist. The physician who fails to equip his office with modern fixtures will not be able to locate these finer points in diagnosis. Very often tonsils are infected secondarily from the teeth. I do not think that tonsils should be removed without first attending to the teeth. Dr. Rosenow declares that the lymphatics of the mouth and jaws drain into the tonsils. Some of the infections of the tonsils improve, or may entirely disappear following extraction of infected teeth.

Accessory Sinuses: Infection here is more common following influenza. It is not the acute sinusitis that is most likely to produce arthralgia; to the contrary, it is the chronic variety that produces a continuous stream of poisons that is most likely to produce arthralgia. Evidence of such infection is usually found in a patient suffering with so-called "Catarrh of the head," usually a profuse yellowish, fetid, nasal discharge; more commonly it is unilateral. He will complain of a bad taste in his mouth, appearing irregularly during the day. Pain is an indefinite symptom but if present it is usually located over the eyes and in the temporal region. As a means of diagnosis the xray and trans-illumination are the most reliable.

In conjunction with nasopharynx the chronically infected middle ear,

and mastoid are not to be forgotten. I believe that a long continued attrack of otitis media is responsible for more chronic joint pains than is generally credited to this area.

Gastro Intestinal Tract: The stomach as a primary focus for the absorption of toxins producing arthralgia is rarely at fault. In fact the stomach is but rarely ever the primary seat of any systemic affection. We recognize gastroptosis of some importance on account of the slowness in which food passes, allowing chemical and bacteriological changes to occur—thereby serving as a medium for the production of toxins, which, if absorbed may in this manner produce a toxic arthralgia.

More commonly do we find the gall sac the seat of trouble. In order to have elaboration of toxins it is not necessary for gall stones nor an acute cholecystitis to be present, altho a history of having had such a condition is a predisposing factor. It is the chronically infected gall bladder that is more commonly the greatest factor here. The most prominent symptom here is a slight intermittent pain, made worse by deep palpation at the angle of the ribs; with heavy percussion an area of soreness may be elicited at the angle of the right scapula. History of slight indigestion, eructation of gas after meals, frequent toxic headaches. The symptoms referable to the gall sac are in proportion to the pathological changes. The point I wish to emphasize is the absence of the more prominent signs and symptoms of gall bladder trouble, which may lead us to ignore this region as a possible focus of infection. Infection of the gall bladder may gain entrance thru the blood stream or by way of the ducts from the intestines. Inflammation of the ducts produces stagnation and stagnation predisposes to infection. Such a gall bladder may contain a thick mucoid secretion;—a veritable hot bed for the progressive multiplication of bacteria and their toxins. Xray examination here will be practically negative.

The large and small intestines as factors in producing arthralgia may be summarized as chronic intestinal stasis. The conditions producing such a stasis are numerous, a few of which I will mention: Chronic appendicitis, adhesions, kinks, enteroptosis fecal impaction, foreign bodies, volvulous, intussuseption herriæ's, cicatricial stricture, tumors, paralysis, etc. Whatever the factor in producing stasis, the essential truth to bear in mind is the production of toxins by bacteria and chemical changes of food. The stasis permits more absorption of these poisons by the circulation, thereby producing constitutional symptoms, particularly arthralgia. The large intestines play such an important part in the absorption of poisons that Metchnikoff, Lane and others would regard it as a useless and dangerous encumberance and would take it out and throw it away.

The appendix I will endeavor to consider alone on account of the prevalence of chronic appendicitis. In such a chronic infection we find an area that is directly or indirectly responsible for toxic arthralgia. I feel that we have passed the age when it was not safe, nor wise, for a patient to come to us with a pain located in the right iliac fossa. Therefore, we are to adopt a conservative idea of appendicial inflammation. A chronically inflammed appendix is a focal infection absolutely as capable of producing arthralgia as an apical abscess or pussy tonsils. The patients so affected are not, but in few rare instances, aware of any trouble located in this region. They

may in some cases complain of pain in the region of the right sacro iliac articulation or in the right flank or perhaps the right hip joint. I do not mean by this that every patient who has a pain in these regions is affected with chronic appendicitis, but a careful examination and painstaking history for such a condition may help to confirm or eliminate this focus. In chronic appendicitis, dyspepsia may so dominate the clinical picture as to lead us to believe the case to be one of gastric disease. There may or may not be tenderness in the region of the appendix, altho, occasionally in those recurrent attacks, tenderness may be found at McBurney's point.

In attempting a diagnosis of any gastro-intestinal lesion producing toxic arthralgia, the greatest aid will be a thorough clinical examination supplemented by a thorough x-ray analysis.

In making your diagnosis as to cause of toxic arthralgia, do not stop when you have found one focus, for there may be many foci, which are to be remedied before your patient will realize relief. Search diligently for those areas of focal infection. Let your motto be similar to that of the Royal Northwest Mounted Police, "In attempting to find your man, let your trail lead you to the uttermost parts of the earth, but find your man." So it should be with us—even tho the symptoms should lead you to the uttermost parts of the human anatomy—find your focus or foci of infection. The treatment of toxic arthralgia may be summarized with three words,—"Remove the cause."

Dr. J. M. Templeton, Cary: I want in the first place to express my gratification that so many young men are reading papers at this meeting and I wish to discuss them not so much in the hope of shedding more light on the subject, but rather to encourage young men in such efforts that they may profit by my mistake not waiting till they are too old to write well. I would be especially glad to say something on the paper of my friend, Dr. McBrayer's son, but I must admit I never heard of the test of which it is the subject until this good hour; also that of my friend Leinbach, but I know too little about "hypertension" to do so. My friend Dr. Finch has just read an excellent paper on an up to date subject. It presents two points that impress me: First, the futility of treating symptoms; second, the importance of looking back of the effect to find the cause.

When I graduated some 40 years ago I knew that a pain in the knee was sometimes a symptom of disease of the hip-joint and I was often on the "anxious seat" lest I prescribe chloroform liniment applied to the knee for a case of morbus coxarious.

The first important reflex, if I may call it such, of the character with which Dr. Finch's paper deals, that I recall was eye strain, which was so ably championed by Dr. Ambrose L. Ranney. That was years and years ago and I guess I was impressed by it because Dr. Ranney was one of the faculty at the University of New York City when I was a student there. He made the mistake most pioneers in such things made in carrying them to extremes, professing to cure everything from "corns to consumption," by correcting eye-strain, still he succeeded and got where he could keep his private yacht.

Next we had the era that attributed everything, especially everything feminine, to the condition of the organs of generation, celiotomies and ab-

dominal section became the fashion with a holocaust of sacrificed wombs, tubes and ovaries. Next, I think, taking them in chronological order, we began to attribute a multitude of diseases to the appendix and gall bladder and these organs were cut out by thousands. After a time we found that these operations would not cure everything, and sanity and system and common sense led us to discriminate when and when not to operate.

Now we turn to the tonsils and teeth and there's a tendency to go to extremes in getting rid of them, and bye and bye, we'll know when and when not to remove them. Then it will be something else, possibly following the hints in Dr. McNider's paper. When we find albumen in the urine we'll treat the liver as the offending organ. It's strange to me that for thousands of years we never traced these diseases back to these causes. I expect it would have astounded Old Hippocrates if he'd been told rheumatism could be cured by extracting a tooth or tonsil. Yet we may have some equally wonderful things ahead of us. Do you know I never treated a case of Osteo myeltitis in a baldheaded man in my life; will we cure it some day by pulling out a tuft of hair?

The cardinal symptoms of meningitis are connected with the feet; Kernig and Babinski's signs and will we cure it some day by pulling out toe nails?

SYMPTOMATOLOGY OF TYPHOID FEVER

Dr. P. R. Hardee, Stem.

Since promising to write a paper on typhoid fever, and not having done so, I feel that I am due the stenographer an apology. I feel that I am also due the Society an apology for promising to write a paper when I knew full well that I could write nothing that would be legible.

In taking up this subject, which goes back into tradition, I know that you are not going to expect anything new or startling from one who can not write anything legible. The thing, gentlemen, that we are most in need of in the symptomatology of typhoid fever is some cardinal symptom which, in the early stages of the disease, will point the way and help to make the diagnosis easy. Unfortunately, however, the symptomatology of typhoid fever is somewhat as it is in tuberculosis—there is no cardinal symptom by which we can recognize the disease in its early stages—and often before it is recognized it makes great inroads and many lives are thereby lost.

Now, it is true that we have some tests by which we can say with some degree of positiveness that our patient has typhoid fever, provided those tests are positive, but none of these tests are supposed to be positive under about six to eight days. For instance, the Widal reaction is not supposed to be positive before the eighth day of the disease, and the test that I have found to be of more benefit to me than any other is the Russo test. I think that you will find it positive earlier than by any other test.

In treating this disease, and studying the symptomatology, it may be that I am a little bit presumptuous, but I believe that I have found that symptom which we, as general practitioners, are so much in need of in the early stage of the disease. I have found what, to me, is a cardinal symptom. It is a symptom that I have found present in a large majority of the cases on

my first or second visit. It enables me to say with a good bit of certainty, certainly on the second visit, that the patient has typhoid fever. It is this symptom about which I am going to talk to you this afternoon. It was first noticed by me on taking over a case of typhoid fever in the month of September, 1917.

In taking over this patient, who was in about the fourth week of the disease, in going over him in my examination I found the heart and lungs normal, or as nearly normal as you would expect to find in a patient in the fourth week of the disease. But when I placed the stethoscope in the upper gastric region, well nigh under the ensiform cartilage, I detected a sound that I had never before heard in that region. It was something that was new to me, and I did not know what to make of it. The sound that I heard was more like the sound produced in a loud murmur in mitral regurgitation than anything else to which I could compare it at the time. I went back and put the stethoscope over the heart, but there was no mitral regurgitation. I should have said that this sound was synchronous with the pulse. I knew that it was a heart sound. Instead of getting a pulsation at the end of the ensiform cartilage, we got an explosion. It was much like the noise of an aneurysm, but there was no tumor and no pulsation, I knew that it could not be an aneurysm. So I left that patient confounded and nonplussed, not knowing what could produce the sound in his stomach that I heard. Two days later I saw some other patients that had gotten infected from this source, and I listened for that particular noise and found it present in each one at the first visit. There were six or eight cases from that source of infection which I treated in the next few weeks, and every one produced that same noise in the very early stages of the disease, except one. I have had one patient since who was short and stout and in whom the disease ran a very light course, and I detected no abnormal sound in his abdomen in the whole course of the disease. He is the only one I have seen since 1917 who has not had that symptom from the very beginning and all along through the disease. After seeing six or eight of these patients and finding this sound almost always present I began to think that I had found a new symptom of typhoid fever.

I realized, gentlemen, at once that if this noise which I heard in the epigastric region, well nigh under the ensiform cartilage, was a symptom of typhoid fever, it is valuable as a symptom in proportion as it is absent in other conditions. So I went to work and examined the abdomen of every patient I saw for quite a while, with negative results. After a few months of patient searching there came to my office one day a small, thin, anemic woman. I judged from the contour of her abdomen that she had reached the sixth month in pregnancy. In going over her abdomen to see if I could find the old familiar sound, I did not hear it in the epigastrium, but when I got down to the right siliac region I heard the sound. I at once recognized that it was what writers call the uterine *bruit* of pregnancy. So I argued that if this was called the uterine *bruit* of pregnancy, I would christen the sound which I discovered the epigastric bruit of typhoid fever. It seems that the pulsation comes to the end of the ensiform cartilage and splits up into a bruit.

I continued these examinations on every patient I saw, and the succeeding spring there came a young man to my office suffering with symptoms which

I thought were produced by a peptic gastric ulcer. In going over him I detected the same sound. My tentative diagnosis in this case was gastric ulcer. Knowing the young man's disposition as I did, I knew that I could not cure him at home, so I sent him to a hospital, where they verified the diagnosis with the different tests and put him to bed and cured him. He came back home, but the bruit remained there for quite a while after he was cured of the ulcer. Still I continued. A few months later I was called one night to see a woman, and when I got there they told me that she had been vomiting blood and that she had vomited until she fainted. From the amount of blood on the floor, I did not doubt a word about her having fainted. I made a tentative diagnosis in this case of gastric ulcer. That night the hemorrhage had stopped. As soon as I could make a manual examination I listened for that particular sound, and about four inches from the end of the ensiform cartilage, to the left, I heard it. I believe you will get this bruit in gastric ulcer. I hope the gastroligist will take up that hint and follow it out.

Now, as to the time, I have told you that you will find this bruit in the very earliest stages of typhoid fever. A young man came to my office one evening suffering with what he called indigestion and dyspepsia, but I noticed that he had an epigastric bruit, the old familiar sound I had so often heard in typhoid fever. Two days later I received a message from his father stating that the boy was no better and to come to see him. He ran the usual course of typhoid fever for four weeks and had hemorrhages. I believe that we have in that bruit a cardinal symptom of typhoid fever in the early stages. It has never failed to be present in every case I have seen since I first detected it, except one. The number, however, is not large. As to the time, you will find that bruit present not only in the beginning, but present all the way through. I remember the last patient whom I treated. It was the most prominent symptom all the way. When I discharged that patient, when he was told it was unnecessary to come again, the bruit was just as loud as at any time during the disease. I thought I would follow up that case and see how long it would follow a case of typhoid fever, so I instructed the patient to report once a week for an examination. He reported promptly for eight weeks and the bruit was still there. I saw that he was getting tired and was wondering why I continued to examine him so often, so I told him to come again at the end of a month, which was three months after his recovery from typhoid. The bruit was just as prominent then as during the disease.

I do not think there is anything more. I hope that you gentlemen will look for this thing, and I believe you will be interested in it. It will help you to say with a good deal of certainty to the patient, on the second or third visit that he has typhoid fever. The symptoms are so indefinite in early typhoid, so unreliable, that it takes a good time to say whether it is typhoid. This is the one reliable symptom that I have been able to find in the early stage of the disease, and it stays there all the way through. I do not know to what it is due. One doctor said that it might be due to anemia, but I have treated cases of pernicious anemia and have not found it. I hope some scientific man will take up this matter and find out what produces this bruit.

SOME FACTS, OLD AND NEW, CONCERNING THE HEART AND THE PULSE

Dr. Hubert Benbury Haywood, Jr., Raleigh, N. C.

The advances in this branch of medicine in recent years have been so marked and the changes of opinion so great that they strike one as being almost revolutionary in character.

The polygraph and electro Cardiagraph have come into use and enabled Clinicians of diagnose abscure conditions, as auricular fibrillation, heart block, and other diseases of the myocardium and its valves.

However, Sir James MacKenzie, in a recent work states: "The employment of instruments of precision fosters the idea that medicine is becoming more scientific with the extension of their use, and there is a tendency to rely more and more upon them, and to substitute them for the senses of the physician. I have little hesitation in saying that this attitude towards methods of examination which is dominant today is based on a fallacy. So far from the clinical methods of examination by the unaided senses being exhausted, they have not been sufficiently cultivated, and the substitution of mechanical methods for them shows a lack of understanding of what clinical medicine means and how its study should be presented."

The classification of symptoms in dealing with a diseased heart will show the functional efficiency of that organ. The symptoms revealed by a mechanical device cannot well do this, for they belong to the structural group.

The Stethoscope shows a heart murmur, and too often we put this down as the whole story and write finis after the patient's name.

We do this in spite of the fact that the heart is in full compensation and there is no evidence of disease of the myocardium. Why not study the clinical symptoms and find the real potent condition? Is the myocardium diseased, or is there only a valvular condition present? May not the so-called functional murmur heard over the heart, if it fits in with the clinical symptoms, be indicative of disease of the myocardium and really be of more importance as to prognosis at the time than a loud systolic murmur at the mitral valve?

Valvular disease of the heart is with few exceptions easy of recognition. Changes in the heart muscle are, on the other hand, often extremely difficult of recognition. Although the term "Heart disease" is in the hands of many of the laity, and the profession also, associated with a valvular lesion, it cannot be too strongly emphasized that the ability of the heart to carry on its functions is dependent almost entirely on the condition of the Cardiac muscle. The majority of valvular lesions are for a long time, and in many instances, always of secondary importance.

So long as the heart muscle remains healthy, the heart subject to chronic valvular disease is capable of performing its work as well as a normal heart.

When, however, the heart muscle becomes exhausted as the result of compensation having reached its limit, or when the heart muscle becomes degenerated as the result of disease, with or without valvular defects, the most serious circulatory disturbance takes place.

Degenerative changes of the heart muscle are too often over looked, although the etiological factor should put us on our guard. Diphtheria is a well recognized cause of acute degenerative changes in the muscle, and may end fatally unless prompt recognition is made. Too often a condition that is real and vital is passed up and diagnosed as "weak heart."

The structural changes which take place may be: Physiological or pathological hypertrophy.

Dilation of one or more of the chambers.

Degenerative changes of the muscle, which may be acute or chronic.

Unusual conditions such as syphilitic gummata, abscess and aneurysm.

Two forms of hypertrophy are noted.

Simple hypertrophy without change in the size of the cavities of the heart.

Hypertrophy plus dilation of the cavities.

Valvular disease is the commonest cause of hypertrophy. Chronic adhesive pericarditis is another cause. Arteriosclerosis and chronic Nephritis are the next commonest cause of hypertrophy. Excessive beer drinking is a common cause. Tachycardia, as seen in Graves' disease, due to increased cardiac action, is often noted as a cause.

The changes in a myocarditis which impair the structure and the function of the muscle may affect all or only a portion of the heart muscle. The severity of the lesion will therefore often depend upon its location rather than its extent. For instance, a degenerative change may affect the auriculo-ventricular bundle of His and lead to a complete or partial heart block. With a few exceptions, an acute myocarditis occurs as a result of some acute infectious process.

Among the acute infectious diseases noted as affecting the myocardium are acute Rheumatic Fever, Diphtheria, and Influenza, as we have all learned to our sorrow, when often the signs of Cardiac weakness do not appear for some time after the disappearance of the disease.

Syphilis may cause an acute myocarditis during the acute stages of the disease. Typhoid Fever often leaves the myocardium permanently damaged.

It too often happens that in our anxiety over the primary disease we lose sight of the secondary condition. Often the symptoms are so slight as to be readily overlooked. Usually they are restlessness or apathy, breathlessness on exertion, and a sense of constriction in the chest, and sometimes anginoid pain. In the more serious cases there will be evidences of dilatation of the heart, cyanosis, dyspnea, precordial and hepatic pain, vomiting and edema.

Physical signs show:

The patient is rather pallid and either restless or apathetic. If dilatation has occurred there may be cyanosis and more or less edema of the lower extremities. If dilatation has occurred the apex is diffuse and displaced to the left.

The pulse is usually feeble, with or without an increase in rate; after influenza a slow pulse may be encountered for weeks after an attack. The blood pressure is usually low after an acute myocarditis.

If dilatation has occurred there is an increase in the transverse diameter of the heart. If myocardial weakness is at all marked the valvular sounds are accentuated and short, and the first sound lacks the normal muscular quality.

The second pulmonic is usually sharply accentuate; either the first or the second sound may be reduplicated. If reduplication of the first sound occurs it is one of the first intimations of a dilatation.

A functional murmur at the mitral area is heard often, and at the same time a similar murmur may be heard at the tricuspid area.

The causes of chronic myocarditis are varied. The chronic lesion is in nearly all instances a sequel of an acute process.

The change is usually insidious and gives no evidence if its presence until serious muscular inefficiency develops. One of the commonest causes is disturbances of the coronary circulation with consequent poor nutrition of the cardiac muscle. The causes of the coronary sclerosis are the same as those of arterio-sclerosis in the body elsewhere.

The final stage of valvular disease usually is muscular inefficiency due to myocardial degeneration. This is caused by overwork and perversions in cardiac metabolism.

Included in this group are those instances in which the heart has for a long time beat at greatly increased rate, the most notable example of which is seen in exopthalmic goitre.

The muscular inefficiency usually manifests itself in that part of the heart where the strain has been greatest. Thus in general arterio-sclerosis, aortic insufficiency, and the hypertrophy due to excessive exercise, it is the left ventricle which is subject to the greatest strain.

On the other hand, chronic pulmonary changes produce the greatest change in the right ventricle.

The clinical picture is a varied one. Often sudden death may be the first intimation that the disease exists. Cabot states that the condition was recognized correctly in 22 per cent. of cases, overlooked in 22 per cent., and diagnosed when not present in 52 per cent.

The most pronounced symptom is that of cardiac insufficiency. Very often the symptoms of cardiac weakness are overshadowed by some special symptom complex, as Angina Pectoric, Stokes-Adams disease, or hypertension with or without nephritis. The first intimation of myocardial weakness may be transient attacks of dizziness and faintness, and this is especially apt to occur in robust middle aged men with hardening of the arteries. Breathlessness and a sense of oppression in the chest after some light but unusual exertion are early symptoms. Pain is especially apt to occur if the exertion follows a meal. The pain passes off with the eructation of gas. The trouble is oftimes erroneously called dyspepsia. Slight swelling of the feet and ankles may be an early manifestation.

Dyspnoea may be associated with these symptims. In other instances the patient suffers from collapse in which he sweats and has a feeble but slow pulse. In these individuals with fatty overgrowth of the heart asthmatic attacks are common. Their puffing respiration is usually ascribed to obesity, but it is more often an evidence of cardiac weakness. In some corpulent

individuals the face has a dusky, congested appearance which is commonly ascribed to ruddy health, but which in reality is due to venous stasis resulting from faulty heart action.

Examination of the heart will show some increase in dullness to the left, and intensely accentuated second aortic sound, and accentuation of and a valvular quality to the first sound at the apex. A harsh systolic murmur at the aortic area is a frequent finding.

Briefly, it may be stated that the etiology and symptomatology of chronic degeneration of the myocardium and the blood vessels are often essentially the same and the presence of one almost invariably implies the other. It is interesting in this connection to note some of the irregularities affecting the contractions of the myocardium as shown in the pulse. The chief forms are.

Sinus arrythmia.

Premature contraction or extra systoles.

Heart Block.

Auricular Fibrillation or delerium Cardis.

Auricular Flutter.

Paroxysmal tachycardia.

Pulsus alterans..

As we know, the heart muscle is composed of two types of tissue, the mature, which is purely muscular and responds to the impulses; the primitive, or neuro-muscular, which originates and conveys the impulses.

The sino auricular node, or pacemaker, situated in the wall of the right auricle near the opening of the superior vena cava, under normal conditions gives rise to the impulses exciting the heart to action. Nerve impulses proceeding from this node are distributed throughout the auricle and to the nodal tissue at the auriculo ventricular junction, from which tissues they are carried to every part of the ventricles by the Bundle of His or its branches.

Under certain conditions, either temporary or permanent, the tissues of the heart may become hypersensitive and give rise to impulse formation which is more rapid than the pacemaker. These impulses may arise in any part of the heart tissue either auricular ventricular or nodal, and replace the impulses from the peacemaker. From these facts it seems that irregularities occur in at least three ways.

1. Alteration of impulse formation at the sinoauricular node, due to altered vagal impulses.

2. Hypersensitiveness in some portion of the heart, giving rise to impulses which replace those from the sino auricular node.

3. Some disturbance, either temporary or permanent, in the conducting system, which so interferes with its function as to block or delay the transmission of impulses, the severity and location of the disturbance determining the degree and effect of the block. From the first of these it will be seen that the heart itself is not necessarily impaired, but is simply responding to influences that are changed either in rate or rhythm, and that this change is due entirely to extra cardiac conditions and is dependent to a large extent, if not entirely, on altered excitability of the vagal center.

In the second the trouble is in the heart muscle but is due to hypersensitiveness, the result of nutritional changes which may be purely temporary in character and without pathological change in structure. The third group is more likely to be due to permanent alteration in the tissue, but may be seen in acute infections when the heart muscle is involved, and which will entirely disappear with disappearance of the infection and restoration to normal.

Sir James MacKenzie, in commenting on irregularities, says, "Although so little has been said about irregularities by teachers and writers, the subject has been by no means ignored in practice. So ingrained has the belief become that a heart to be normal must be regular that when an irregular heart was met with it was looked upon with suspicion and many persons with sound hearts have been rejected for life insurance because of the presence of an innocuous irregularity, while tens of thousands have had their lives restricted and have been subjected to prolonged and useless treatment for a condition that called for no treatment. On the other hand, cases where the irregularity should have revealed the necessity for treatment were never properly understood and so were never properly dealt with."

The great majority of irregularities are of two kinds, one which occurs in youth and one which occurs in adult life.

Proceeding on these lines, after I had collected over a thousand cases, I sought for some definite basis of classification. With the assistance of the jugular pulse I was able to recognize different forms according to the mechanism of their production. Two large groups, which included between them 90 per cent. of all cases, emerged distinctly. These two groups differed. In one all of the chambers of the heart participated in the irregularity, the contraction in each case being normal, while in the other, the ventricle contracted prematurely while the auricle maintained its rhythm, or both auricle and ventricle contracted prematurely, the irregularity which is now called the ventricular and auricular extra systole.

I was now able to separate the two groups by a second method, namely, the age incidence. I found that the former group occurred predominantly in the young (the youthful type of irregularity) and the latter group occurred predominantly in the latter decades of life (the adult type of irregularity.)

Accepting MacKenzie's statements as based on experience with persons believing themselves to have heart disease, we must believe that the majority of the cases are not suffring from disease of the myocardium.

Sinus arrythmia. MacKenzie goes so far as to claim that this form of arrythmia is an indication that the heart is not damaged. He looks upon the presence of this irregularity as an evidence that the heart has escaped damage when the rate is found below 70.

Lewis claims: "The commoner forms of cardiac irregularity due to the sinus are of little prognostic value and are to be regarded as slight exaggeration of a normal phenomenon, respiratory irregularity, or as evidences of a mild or insignificant instability of tonic inhibitory nerve action."

If it is respiratory in type, the change in rate with the rise and fall in respiration will be easily detected. If it is not established by these means it may be detected as the breathing is deepened.

There is no irregularity in the force of the pulse, the waves being equal in volume and the irregularity disappears as the pulse rate accelerates. It is almost confined to rates below 100 per minute, is more noticeable as the pulse rate decreases in frequency, and usually disappears after exercise.

Extra Systoles. MacKenzie states: "Seeing that healthy men and women may present this irregularity, it can be accepted that extra systoles in themselves are not indications of disease or impairment of the heart's efficiency. When there are signs of heart failure the prognosis should be based upon the other symptoms present and not on the presence of extra systoles. It may therefore be stated that when the extra systole is the only abnormal sign the prognosis is good and when it is associated with other signs the prognosis should be based on these other signs.

Another authority (Wiggens) states that premature contractions may arise in a perfectly normal heart. More often they arise in hearts that are abnormally irritable. It may be assumed in these cases that irritability of the heart is increased through toxins, internal secretion, caffein, nicotine, etc., so that it reacts to the tiny normal ineffective stimuli that bombard it, or that pathological disturbances of structure are actually present.

Their chief clinical value is that they attract attention to the cardiac condition, which leads to a search for the presence or absence of other symptoms of cardiac impairment.

Lewis, on the other hand, states that premature contractions constitute and bear witness to defects; that there is mechanical imperfection and there is the evidence of altered cardiac nutrition, and the more frequent the interruptions the greater the degree of such defects. Premature beats, true paroxysmal tachycardia, auricular flutter and fibrillation have a common pathological basis: they are one and all the outcome of new impulse formation in the heart.

The prominent points in diagnosis may be mentioned. The beats missed at the pulse are heard at the heart and occur in threes and fours with a prolonged pause following, the number of beats being determined by the force of the extra systole.

If not sufficiently strong to open the aortic valves but three beats will be heard, otherwise four will be noticed.

The pulsations between the extra systoles are regular in both rate and rhythm. The premature contractions very rarely accompany rates of 120 and over. While they not infrequently disappear after exercise, they do not always do so. Extra systoles usually increase in frequency as the pulse rate becomes slower.

In this connection I was interested in writing to several of the leading Life Insurance Companies of this country. Their figures are rather startling.

Group 29. Irregular Pulse found on examination or at some time within ten years of the date of application. That group was made up of nearly 2,800 lives and showed a general average mortality of 95 per cent., but with a tendency at the later ages of life to a higher mortality, ages 50 and over showing 22 actual deaths and 19 expected.

The next group studied was made up of persons with an intermittent

pulse found at the time of the examination or within ten years of that time. The number of lives involved in the study was over 2,100. The mortality at the earlier ages was small and showed a tendency to increase with advancing age.

A third group was made up of persons who showed a pulse rate between 90 and 100 on examination. The mortality in this group was 172 per cent., and this high mortality rate was not confined to any age but extended through the entire history of the group. There were over 6,200 lives in the group.

Finally, a group made up of persons with a pulse rate of over 100 found on examination or within ten years. There were 740 odd cases under observation. The mortality was high everywhere. The general experience was 205 per cent.

In conclusion: A pulse of 90 and over is abnormal. Irregular and intermittent pulse is of decidedly less significance at the earlier ages of life than at the later ages.

There is a distinct relationship between the amount of disturbance of the pulse and the extra mortality incident thereto.

Finally, a heart murmur does not tell the whole story as to the condition of the heart.

DISCUSSION OF DR. HAYWOOD'S PAPER

Dr. Hardee, P. R., Stem: I wish I were able to discuss that paper, for this is a subject in which I have been very much interested.

There is one part of the paper that puzzles me as much as anything with which I am confronted in the practice of medicine, and that is diagnosing the different lesions when the myocardium is affected. I can usually, in valvular affections, tell with some degree of certainty what particular lesion it is, but when there is myocardial degeneration, with irregular pulse and vague symptoms, it troubles me as much to make a diagnosis as anything I meet with.

Dr. O. Edwin Finch, Apex: I was very much interested in the doctor's statement as to slow pulse, because I feel that I have been responsible for some men's not getting insurance on account of that. Feeling that it was due to some organic lesion, I have stressed it, and probably that applicant may have been entitled to insurance.

I would like to ask Dr. Haywood if he has any explanation for slow pulse following influenza.

Dr. Haywood: The only explanation that I have seen that is reasonable at all is that it is due to a myocarditis associated with the disease.

Dr. A. McNiel Blair, Southern Pines: Dr. Haywood has presented facts on a subject of special interest to us all, as we all have hearts, and of particular interest and benefit to some of us, who have been endeavoring to give this subject special study.

It is indeed a broad subject, and the subject material is difficult to handle in one paper.

In reference to myocardial changes, the grouping of certain clinical findings is essential for the proper determination as to the integrity of a heart

muscle. Occasionally one or more constant factors exist which should always suggest further investigation, lest in the consideration of a patient with other ailments, the heart muscle status per se be overlooked, as we all know myocardial changes are presented in unusual ways, and are variable indeed.

To be sure one notes rather constantly in many of the so-called classical cases, palpable arteries that feel thick and resisting, or tortuous and uneven, like a string of beads, and it is safe to presume that the heart muscle in this case is not sound.

Palpatation of the liver should not be neglected, as the physical signs of hepatic congestion are not improperly secondary to more or less cardiac inadequacy.

Auscultatory percussion helps to confirm ordinary percussion, and should be practised more frequently.

The disparity noted between the first and second heart sounds has often been the first factor in calling my attention to an abnormal heart muscle, especially in a patient who presents strong, usually regular pulse, with no cardiac impulse, apparently normal heart dullness, clear heart tones without murmur, and often radial arteries that are not stiff, along with negative urinary findings. The real nature of the case would have been overlooked had it not been for this one sign; accentuation of the second, with weakening of the first sounds.

The blood pressure findings, along with the study of the pulse rate, taken not only in the recumbent position, but also sitting and standing, have been helpful in determining the heart muscle strength. So also the Cardioradiogram or the fluoroscopic picture permits of outlining the heart and large trunk vessel, revealing the approximate extent of dilatation, as well as any other outside factor that may play a part in the disturbed mechanism of the heart per se, as for example, in certain forms of pleural adhesions.

Dr. Haywood touching the subject of fibrillations, with associated heart muscle changes, brings to mind a case of auricular fibrillation, where heart muscle degeneration was not evidenced immediately, but was delayed some little time, between two or three months. The one symptom predominating during that period of apparent compensation was the extreme rapidity of the pulse. Then there followed, in the advent of a cold, the degenerative heart muscle changes in an aggravated form, with partial heart block, with associated pericardial and pleural transudate.

I wish to express my personal appreciation to Dr. Haywood for presenting his able paper to the section.

REMARKS BY DR. HAYWOOD

A letter to an authority on the heart as to auricular fibrillation and heart block brought this reply:

"So far as I know, a definite diagnosis of auricular fibrillation can only be made with the cardiograph. It may be inferred in a case where the pulse after reasonable exercise remains persistently irregular while the rate is above 120—and by pulse I mean the pulsation of the heart, not the radial pulse.

"Heart block can only be determined with the polygraph, but may be suspected when beats are definitely dropped or when the apex beat as determined by the stethoscope does not coincide with the pulsations of the jugular bulb. A good plan is to put a small black piece of sticking plaster over the jugular bulb to make any pulsations there more obvious."

Dr. J. T. J. Battle, Greensboro: Dr. Haywood spoke of how to test the myocardium. That question used to bother me considerably, until I met Dr. Lankford, of San Antonio. He gave me a very simple experiment to go through with, which I have found quite satisfactory in every case. That is, get the patient quiet, so that the systolic blood pressure will not be affected by exercise or excitement. Take his blood pressure, both diastolic and systolic. Exercise him equal to walking up two flights of steps, with the arm band still on his arm but deflated. Then, thirty seconds after he is seated, take the pressure again. If the heart is normal the systolic pressure will have gone up from 15 to 25 millimeters, while the diastolic pressure has remained stationary. It will return to normal within one to three minutes. If there is a weak myocardium, it is slow in coming back to normal. If there is a very weak myocardium, it does not respond to the exercise and the systolic does not go up. If the systolic falls you have an exceedingly weak myocardium. If the diastolic pressure rises and the systolic falls you have a man in a very dangerous condition. If you try that you will find it exceedingly satisfactory. Of course, you must deflate the cuff after each reading.

A REVIEW OF THE RECENT WORK ON AMŒBIC DYSENTERY

William Allan, Charlotte, N. C.

During the period of the war considerable advance has been made in our knowledge of several of the factors of the amœbic infection problem, particularly by our British allies. In their campaigns in the Eastern Mediterranean area they were promptly confronted with serious casualty rates from dysentery, and as the Gallipoli dysentery was reported as largely amœbic by early observers, they met this situation by intensively training a number of protozoologists and concentrating their chronic dysenteries in special hospitals.

This war work has increased materially the definite statistical data of the incidence of amœbic infections among different races and in different parts of the world. In examining about 31,000 British troops returned from the Near East, the majority if whom had had dysentery or other bowel disorders, 9.8% were found infected with Entamœba histolytica: (1). Of nearly 7,000 troops and civilians without any history of bowel trouble, examined in the Eastern Mediterranean area, or invalided from that region, 10.5% were found infected. In 5,000 persons with a record of intestinal disorders examined in France and England, mostly troops from the Western Front, 8.9% were found infected, while in 3,761 individuals without bowel troubles, 5.8% were infected. Kofoid found 10.8% of 1,200 American soldiers returning from France infected. The great majority of these individuals received a single examination, which Dobell has shown brings to light less than one-half of histolytica infections, so that the

figures given above are something less than half the true incidence of this protozoal infection. Such a brief summary may give some idea of the magnitude of the problem; of the approximately 50,000 persons examined, both in Western Europe and the Near East, both healthy and dysenteric, between 13% and 25% were infected with Entamoba histolytica.

Medical men have been handicapped by a lack of zoological knowledge of the intestinal amœbæ but have had to go blundering ahead because of the slowness of trained protozoologists to lead the way out of this wilderness. Schaudinn in 1903 adopted the placing of the intestinal amœbæ in a new genus, Entamœbæ, by Cassigrandi and Barbagallo, and emphasized anew the distinction between pathogenic and non-pathogenic species. During the next ten years many new species were described by many observers, the Entamœba tetragena of Viereck being the most important. Walker's (2) work in Manila in 1911 finally led to the abandonment of Schaudinn's erroneous description of Entamœba histolytica and to the boiling down of the Entamœbæ of man into two species, Entamœba histolytica, pathogenic, and Entamœba coli, non-pathogenic. As the former has 4-nucleated cysts and the latter 8-nucleated cysts, all seemed plain sailing for the easy differentiating of species. But in 1917 Wenyon and O'Connor (3) described a non-pathogenic Entamœba of man, with 4-nucleated cysts, calling it Entamœba nana. Their work has been accepted, confirmed and extended by other British workers, and by our own protozoologist, Kofoid, who has shown (4) that this new species is fairly common. Dobell (5) in his recent excellent monograph on the zoological status of the amœbæ living in man has created a new genus for this amœba, Endolimax, calling the organism Endolimax nana. So that we now have to deal with and differentiate three species of parasitic amœbæ, namely, Entamœba histolytica, pathogenic, with 4-nucleated cysts, Entamœba coli, non-pathogenic, with 8- nucleated cysts, and Endolimax nana, non-pathogenic, with 4-nucleated cysts.

The earlier work on differentiating the intestinal amœbæ consisted largely in staining active forms and then interpreting the amount and arrangement of the nuclear chromatin. Needless to say this could never become a popular method. Due to the work of Walker in 1911 (2) and of Mathis in 1913 (6) and of many others, we have been led to turn from the study of trophozoites to the study of cysts. This has been rendered very much easier by the introduction of iodine, or such iodine stains as Donaldson's (7), with which the specimen of stool is rubbed up in order to differentiate the cysts. Iodine makes cysts much more readily recognizable and brings out the nuclei sharply.

Dysenterics unsuccessfully treated become convalescent carriers, discharging cysts in their stools intermittently for an indefinite length of time. Besides these, there are many so-called healthy carriers, who present neither past history nor clinical evidence of dysentery. When possible these cyst carriers should be given the same course of treatment that acute or chronic cases of dysentery receive, for besides being a source of infection to others, some will eventually develop dysentery, and some liver abscesses.

Since Roger's introduction of the use of emetine in 1912, one advance in the treatment of this infection has been made, namely; the introduction of emetine bismuthous iodide. This preparation was first suggested by Dumez,

A. G. (8) in Manila in 1915. A year later the British began using it and seem to have demonstrated its value. Emetine bismuthous iodide, containing about 29% emetine, is given by mouth in salol or keratin coated tablets, one grain two or three times a day. It may be used alone or combined with emetine injections; at present there is a tendency to use emetine injections for 10 to 12 days followed by two to three grains of the double iodide for 12 days in acute cases, and to give 12 to 14 day courses of the iodine alone in treating carriers. Lillie and Shephard (9) cleared up 62 out of 104 carriers with 12 day courses of 3 grains of Emetine bismuth iodide alone. Jepps and Meakins (10) cleared up 20 out of 24 carriers, and McKinnon cleared up 70 out of 131 carriers. Savage and Young cured 14 out of 17 carriers and 8 out of 16 acute cases, with the iodine alone, 2 to 3 grs. for 12 days. Gunn and Savage (11) using emetine injections for 12 days, followed by emetine bismuthous iodid for 14 days, treated 120 acute cases; 82 were discharged as cured, 46 after being kept under observation for more than 30 days, 36 for less than 30 days; 38 of their acute cases relapsed. They treated 190 carriers in the same way; 171 were discharged as cured, 106 after more than 30 days, 65 after less than 30 days, 29 of their carriers relapsed. Turner and Taylor (12) in 366 carriers had 67 to clear up without treatment; 215 were cleared of cysts with emetine bismuthous iodid, and 84 failed to clear up.

These results from British military hospitals seem very encouraging, but their men could be held for observation for only four or five weeks. In spite of Dobell's findings that 90% of relapses in treated carriers takes place within three weeks (13), McAdam has shown that many so-called carriers relapse later on, and Walker long ago found the incubation period of experimental Entamœbic infection running as high as 90 days. In civil life, it would be better to follow cases for a year before pronouncing a cure. In the few acute cases the writer has had the opportunity of treating during the past year, emetine bismuthous iodid has cleared out the cysts, temporarily at least, after emetine injections had transformed the dysenteric into the carrier state. This new therapeutic agent will doubtless prove very useful, but an estimate of its exact value must await a much more prolonged observation of its effects.

The most important addition to our knowledge of the treatment of amœbic dysentery has been presented by Dale and Dobell (14) who undertook to work out carefully the strength of emetine solutions which would be lethal to Entamœbæ in dysenteric stools. They found that when emetine in solution was applied directly to the Entamœbæ, it was not particularly toxic, while it is a well known fact that emetine injections in human amœbic dysentery have a specific amœbacidal effect even in very small doses. They also found that injections of emetine had absolutely no effect on clinical amœbic dysentery in the cat. Therefore, as emetine seems to be without effect both directly and through the medium of the cat, but is very effective through the medium of man, it is pointed out that the specific action in clinical human Entamœbic Dysentery must be because of its action on the host and not on the parasite.

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Dr. T. E. Anderson, Statesville: I would like to ask Dr. Allen what are the comparative results of giving Emetine hypodermically and by mouth?

Dr. Allan, closing discussion: Emetine has been given by mouth in keratin coated tablets.• However, this irritates the stomach and is not a successful method. Several years ago, I reported the use of Alcresta ipecac in ten cases, four of which responded to treatment. This is about half as good as the results by hypodermic injection. At present bismuthous emetine iodid by mouth is being tried extensively. Any method that avoids the necessity of making the chronic cases stop work daily and go to the doctor for a hypodermic, would be very welcome.

Dr. Taylor has asked what to do with cases that do not respond to ipicac. I find that a course of emetine cures permanently about 40%; about the same number are temporarily relieved of symptoms, but will relapse, and about 20% do not respond to ipecac. This latter class can be made comfortable by colon irrigations of saline, or magnesium sulfate, or silver nitrate, and the course of the disease tends toward recovery after a period of years.

THE MODERN THERAPEUTIC VALUE OF DIGITALIS.

Dr. Joseph A. Speed, Durham, N. C.

The use of Digitalis in disease is chiefly based on its powers in giving rest and tone to the heart and as a diuretic by virtue of its ability to improve the general circulation. It is distinctly a cardiac stimulant, and upon the circulatory system finds its greatest field of usefulness. It does not stimulate the renal epithelium or have any effect on the renal structures. In moderate and effective amounts it increases the pulse force, slows the pulse

and increases the pulse wave. The increased pulse force is said to be due to a stimulating influence which the drug has on the muscular fibres of the heart itself. And some observers have claimed the drug permits the heart to do two and one-half times the amount of its normal work. By its ability to stimulate the ventricles to greater effort it restores greater tonicity to the heart, by the prolongation of diastole it can regain its irritability, contractility and conductivity. These being normal physiological functions of the heart and each is essential if the heart does its best work and functionates properly. By its action on the vaso-motor center and the muscular coats of the vessel wall Digitalis has long been thought to raise arterial tension and would therefore be contra-indicated in conditions in which the blood pressure was materially raised. This seems true in animal experimentation but according to Eggleston in humans this is not the case, certainly in proper Therapeutic doses.

Digitalis by improving the circulation naturally improves pulmonary ventilation and respiratory function with a resulting relief of cyanosis and abolition of the vaso-constrictor effect of carbon dioxide on the center of respiration. The improved circulation results in better functioning of the various organs and tissues of the body and therefore tends to restore to normal the several mechanisms by which the circulation is kept and maintained at its most effective and efficient level. By stimulating the Vagus both centrally and peripherally Digitalis slows down the running heart to a safe gait that is best for itself and the other organs which it so materially presides over. It is like lines on the running away horse, a sort of emergency brake which is able to check and quiet the irritable, laboring fleeting heart. It however, is not necessarily an emergency drug for indeed it acts very slowly and lasts long once it has attained its full and proper physiological effect.

The other chief action of this very useful drug is the value as a diuretic. It relieves renal congestion however not by any particular action which it has on the kidney, but by improvement of the circulation.

Heart failure naturally is the result of exhaustion of the cardiac muscle and cardiac function and this exhaustion may be the result and often is of persistent rapid cardiac action. It is going a gait it cannot keep. And the remarkable efficacy of the drug lies in its ability to increase the cardiac force and slow the rate of the pulse and heart to a reasonable gait which it can maintain and supply blood over the body as it normally should. When a cardiac abnormality was found present it has been the custom of many physicians to blindly give digitalis with no accurate observation as to when benefit accrued from its use. Its administration therefore was surrounded by so much confusion and lack of real knowledge of what was going on that its usefulness and uselessness was never clearly determined and often the drug was given due credit or discredit was placed upon it. Digitalis according to most modern experimenters and careful observers should be given for effect. There is not necessarily more therefore than a general official idea as to the proper dosage. It all depends on the disease and the patient. An unusually large dose, much larger than the official amount may be required, effect and results are what is desired by the patient and physician.

In auricular flutter the allied condition of auricular fibrillation Digitalis

finds some of its greatest usefulness and most gratifying results. The flutter of the auricle is said to be more intermittent but may eventuate in the fibrillatory quivering of the auricle. When the rapid heart is due to fever, exophthalmic goiter, the infections and intoxications it is said that the drug has little effect on the heart gait.

The most gratifying and dramatic effects of Foxglove is seen in heart failure with dilatation of the heart and dropsy. According to leading observers and authorities on heart disease 80-90% of these cases suffer from auricular fibrillation and indeed the failure of the heart may be due to or induced by the very rapid rate of the heart in auricular fibrillation. It starts very suddenly and dilates. The response to Digitalis in some of these cases, as you know, is most striking. The patient who has Cheyne-Stokes breathing, orthopnea, edema, ascites, restless, sleepless with that anxious peculiar facies seen in these cases, with a heart beat of 120 or more beats per minute, this distressed patient appears as a new individual once they have become sufficiently influenced by this drug. They lie down and sleep quietly, the swelling is gone, everything is different and they are so grateful. The whole picture has changed, the heart is now beating 70-80 times per minute, full and of good volume, regular and quiet. Of course, rest, purgation and other things are contributory factors which should be remembered but digitalis is the drug which has essentially changed the picture. Patients do better in bed when taking the drug and should not suddenly move about.

According to Sir James McKensie Digitalis does not slow the heart in Aortic Regurgitation. It has been taught that as the drug prolonged diastole it therefore allowed the reguggitant stream to do more damage by the return flow this however has not been the experience and observation of the well known authority in cardiac disease. McKensie states that he has repeatedly pushed the drug to full Physiological effect with vomiting with no slowing of the heart rate.

In Lobar Pneumonia when the heart is tired and has been laboring, pumping blood through a consolidated liver like lung, Digitalis is often an invaluable drug and a life saving agency. In cardiac asthenia, the "tired heart." in the very irritable palpitating heart if it be not due to Gastro-intestinal disturbance Digitalis is of value. It is the best antidote in Aconite poisoning. It acts slowly however and ammonia and more fleeting agents should be used until the drug can take hold. High temperatures always prevent Digitalis from slowing the heart because as proved by Brunton and Cash fever has a depressant action on the vagus centers in the Medulla and also when the temperature is very high the peripheral terminals of the vagus. This is very important and should always be remembered by the busy practitioner.

Of the preparation to use there are a large number from which to choose. McKensie favors the use of the Official Tincture provided it is fresh and of a guaranteed strength. The drug should be physiologically tested and if it is not fresh should not be used. There are more elegant preparations on the market, many of them proprietary and some fat free and can be used hypodermically to better advantage. They are much more expensive however, and this should be remembered in prescribing the drug. Digitalin

in one fiftieth of a grain is often used. Digitalone (Houghton) is given in one-tenth grain doses hyperdermically and represents 16 minims of the Tincture. It is fat free and can be given hypodermically to advantage, is readily absorbed and is not irritating. Powdered digitalis leaves seem very effective in one grain doses combined with an equal amount of squill and mercury and indeed often this so called Guy's or Neymer's pill or the grain each of calomel, squill and digitalis will give results when all other preparations fail. I have now a woman of 56 years who has had Auricular Fibrillation with edema, dyspnea and unable to sleep who has been influenced only by this combination. One has to be careful and not salivate the patient. And often one is at a loss to know whether the calomel, squill or digitalis has been the efficient agent. Some are partial to the Fluid extract. It does not matter so much, whether one uses the infusion, Tincture, Fluid extract or some proprietary remedy, they all should be tested physiologically, and freshly prepared. The Tincture and Infusion if fresh are probably the best two preparations, and should be given for effect and once the effect is gained keep it. This is done by stopping the drug when the rate has fallen to 70-80 beats per minute and give half as much as the rate begins to increase.

By giving and witholding the drug and diligent observation as far as is practicable and possible the quantity necessary to keep the heart gait at a moderate and safe level can be found. The patient should, if intelligent, be instructed to correlate his sensations of relief so that he may acquire a keen knowledge of when it is necessary for him to take the drug. If this is done intelligently many patients especially those with auricular fibrillation may be able to live useful, comfortable lives free from these extreme attacks of heart failure which are so apt to occur in this condition.

The armamentarium of the well informed Physician is not complete unless he has a clear knowledge of this drug, when, how and why to use it. It is one of the most gratifying and useful drugs in medicine. It is a slowly acting effective cardiac stimulant of first choice in certain cardiac conditions and should only be used intilligently and carefully for its physiological effect. If used in this way no danger or deleterious effect need be feared.

T. E. Anderson: I thank Dr. Speed very much and am certain that he and Dr. Faison are the only two men here that know anything about it.

DISCUSSION

Jas. M. Northington: I was in a position to follow the details of the work done on digitalis in the University of Minnesota by Morris and White. A report of this work had for its object the determination of the relative potencies of specimens of the drug under different conditions. Specimens grown in the botanical gardens on the grounds of the University were found to compare favorably with those of English and German growth obtained through the most reputable channels. Very recently, probably because of the interest stimulated by a discussion on this subject at the meeting of the Southern Medical Association, an inquiry as to his method of estimating doses was addressed to Dr. Eggleston. He replied through the J. A. M. A. about four weeks ago. It is well worth looking up, as it

can be readily made use of by every physician. Practically all investigators along this line are agreed that the Tincture is the most reliable and satisfactory preparation.

RADIUM IN THE TREATMENT OF SKIN CANCER

Dr. W. D. James, Hamlet, N. C.

The scope of this paper has been intentionally limited to a consideration of the value of radium in the treatment of cancer of the skin. The value of this therapeutic agent is obtainable only after all methods of using it have been tried and the results classified. After a reasonable amount of experience one is able to regulate the dosage so as to obtain the best possible results. One cannot prescribe radium in certain number of millegram hours—as you would prescribe drugs.

In considering the effect of radium on tissue it is important to know there are three types of rays emitted from radio-active bodies which have been called alpha, beta, and gamma. Alpha and beta are the burning rays and are of low penetrating power. The gamma rays are more penetrating and are not burning or irritating rays. Due to its high penetrating power the gamma ray is commonly spoken of as the therapeutic ray of radium. It acts directly on the nucleus of malignant tissue cells and since they are embryonal in nature, such malignant tissue is acted on and destroyed before the normal tissue cells are appreciably affected by the radium irradiation The alpha ray is soft and is of no practical value in radium therapy. The beta ray is of value and should be employed where the radium can be applied directly to the lesion.

If normal tissues intervenes between the pathology and the surface in which the radium is applied, one must screen the radium so that the beta rays are absorbed to such an extent as to prevent radium burn on the normal skin. Unless the beta rays are cut off by a suitable thickness of metal, the superficial tissues will be subjected to a much greater action than the underlying layers which may result in a surface injury, or so-called beta ray burn. Where you can bring the radium in direct contact with the malignant cells and only superficial effects are required the beta rays are very useful. The resistance of the patient is of importance. The common observation that in two cases with the same type of growth, subjected to the same radiation, different results are obtained; that in one the cancer disappears promptly and in the other it is not affected at all, suggests the resistance in the patient. Again you cannot lay too much importance on the extent of local involvement; large growths may disappear and small ones fail to do so. The most easily injured normal tissue is the eye and the rectum. Radiation carried to the extent of severe injury may defeat its aim in the end.

In every patient, radiation up to but not beyond the toleration of the normal tissue should be given. This part of the treatment can be learned by reasonable amount of experience. The theropeutic value of radium is based on the fact that the radiations from fadioactive substances, if sufficiently intense are capable of destroying living cells. This effect has proved beneficial in the treatment of diseased tissue, since the discovery was made that diseased cells are more susceptible to radiation than normal cells of

healthy tissue. That is, the radium rays exercise a selective action, attacking the diseased cells more readily than the normal ones. By suitable precaution and very simple technique of screening, it is possible with very few exceptions to effect complete retrogression of a tumor without injury to the surrounding healthy tissues. Whether radium is used in the form of a salt in an air tight container or as an applicator the principle of the technique is the same.

The compound of radium, preferably the insoluable sulphate is sealed in a thin walled glass tube, about two millimeters in diameter and in length no longer than is necessary to hold the firmly packed material. The sealed glass tube is placed in a silver container with one-half millimeter wall thickness and the container fits into a brass capsule of one millimeter wall thickness. These containers serve in the capacity of filters; the silver tube being used in cases where light screening is indicated and both metal tubes in cases where most of the beta rays should be absorbed.

Besides the three primary forms of rays already described, there are secondary rays which are produced when the primary rays pass through the metal screens. This form of secondary radiation is of no practical value from a therapeutic standpoint. These rays are comparable to very soft beta rays and in order to prevent a burn it is necessary to provide additional absorbing material by surrounding the metal screening with a few millimeters of rubber dam—a very convenient material for filtering secondary rays may be found in ordinary unvulcanized tube repair gum as sold by automobile supply houses.

Generally speaking, the deeper the ulceration or the larger the nodular mass, the greater the dosage required.

The dosage required in each particular case is readily determined after certain amount of experience. The factors to be considered are the quantity of radium used, the time of exposure, the filtration and distance between radium and the disease tissue. Within certain reasonable limits the same results may be obtained by increasing the quantity in the same proportion in which the time exposure is decreased and vice versa, but extreme variations are not covered by this general rule. You can get the same results by applying 25 milligrams for four hours as you would by 100 milligrams for one hour. The expression of dosage in milligram hours is not correct, because it leads one to think that the only factors which enter into the specification of a dose of radiation are quantity and time, whereas the filtration and distance are just as important.

To the beginner in radium therapy the question of filtration seems to be a difficult problem. Where the radium is in direct contact with malignant tissue or where the tissue is very superficial, one should use beta rays, and therefore a screening should be very light; on the other hand if the pathology is deep-seated or if normal tissue intervenes between the radium and the diseased tissue, then the beta rays cannot be used to any great amount and the screening should be heavy. Beta rays are comparatively easily absorbed and a screen of 2 millimeters of lead for the plaques of half-millimeter of silver and one millimeter brass for the tubes with the added rubber damming to screen off secondary rays is all that is necessary for ordinary cases.

Distance also is an important factor when the lesion is deep seated and overlying healthy tissues have to be protected from injury and when a more uniform radiation is desirable. (For 100 millegrams of radium the distance for the average deep-seated lesion for 6 hours exposure is 3½ cm.) The required distance is obtained by inserting gauze or rubber slabbing between the radium and tumor. It is to be remembered however that distance should be only employed when it is impossible to bring the radium in direct contact with the malignant cells.

In the treatment of epithelioma with radium, one should not insist upon a certain technique as the only correct one. Equally good results may be obtained by different methods of treatment. For many epithelioma of small size and relatively superficial base the following technique may be used. A varnish apparatus of 1-4 strength may be close. One apparatus of this type covers 4 sq. cm. of surface and contains about 10 mg. of radium salt. A silver or lead screen 1-10 mm. thick is placed over the face of the apparatus to absorb the soft beta rays. Over this are placed six or eight thicknesses of block paper to absorb the secondary rays which are produced when the radium rays pass through metal. The whole apparatus is then enveloped in thin dental rubber dam applied to the epithelioma and held in place by adhesive plaster. There are 4 exposures of an hour; each may be given on consecutive days. The screen is then removed and three or four similar exposures are given with the apparatus wrapped only in rubber dam.

Following the treatment a slight inflammatory reaction develops. A crust then forms which corresponds in size to the area of radium applicator. Under the crust which may be shed and renewed several times handling takes place in about six weeks from last treatment. Cutaneous epitheliomas of fungating type are best treated at first with unscreened radium in order to cut down quickly the fungating portions. In this type of lesion a half dozen exposures may be given in successive days with above applicator covered with rubber dam. With the disappearance of the fungating part of the tumor, the base if deeply infiltrated can then be treated with screened radium. Another method that may be successfully used in epithelioma of moderate size consists in giving a single intensive exposure. One may give an exposure of 6 or 7 hours with 50 millegrams of radium salt screened with 5-10 mm. of silver. Moderate reaction takes place and recovery ensues in about six weeks. For treatment of large epithehomac not less than 50 mg. of radium salt are absolutely essential. We have treated 40 cases of skin cancer of all kind with 100% apparent cures.

At the next meeting of the North Carolina Medical Society at Pinehurst, April, 1921, I hope to be able to report a good number of cases of cancer of the cervix and fundus. Also on fibroid tumor of the uterus and excessive flowing at and between the menstrual period. We are now working on six cases of Exopthalmicgoiter with radium and x-ray, which I hope can also be reported on favorably.

DISCUSSION OF DR. JAMES' PAPER

JOSEPH A. ELLIOTT, CHARLOTTE: I would like to express my appreciation of the excellent results Dr. James has obtained in the treatment of skin cancers with radium. There is no longer any doubt but that radium in the hands of an expert, such as Dr. James results show him to be, is of

inestimable value as a therapeutic agent. I feel, however, that with equal skill, xray will produce as good results as radium, in the treatment of skin cancers. Where the lesion is located on the eye lid, or in the mouth, we use radium to advantage due to the fact that it can be placed in close proximity to the malignant cells. The same holds true of carcinoma of the bladder or prostate. Little can be expected of xray in these cases as the rays have to penetrate so much normal tissue before the malignant foci are reached. On the other hand radium can be placed in direct contact with the growth.

Within the past few years the xray erythema dose, or skin unit, has been worked out so carefully by such men as McKee and Witherbee that one is no longer in doubt as to the dosage to use. Recently Kingery has worked out a mathematical curve showing the length of time the ray remains in the tissues and the rate of absorption. With this knowledge at hand it is easy to keep the lesion saturated, thereby obtaining the maximum effect from the ray at all times rather than allow the rays to be completely absorbed before giving subsequent treatment. To my mind this is a great step forward in xray therapeutics and I feel that greater results are to be hoped for as a result of this work.

DOUBLE CHOKED DISCS—OPERATION, WITH RECOVERY OF VISION.

Henry L. Sloan, M. D., Charlotte, N. C.

Mrs. R. D. G., age 19, Eufala, N. C., first seen on March 16, 1920.

Failure of vision and headaches.

About one month ago patient began to suffer with headaches, and vision began to fail, and had failed so much that she had to be led into office. There was also nausea and vomiting, worse in the A. M., and on change of position—not projectile.

When first seen one month after onset of P. I., patient was in a very anxious state of mind; she seemed to feel as if some calamity were imminent. At all times she was mentally alert and answered questions promptly. Complained much of headaches, which did not seem severe.

P. M. H.

For a few months before onset of P. I., patient said she suffered a great deal with rheumatism—which continued up to the time she came to our office.

F. H.

Of no importance.

PHYSICAL EXAMINATION

T. P. R.

Normal.

General appearance good. Appetite good, but digestion poor.

Eye findings: O. D. V. Count fingers two inches. O. S. V. Amaurotic; light perception absent.

Both eyes prominent, but always thus. Pupils widely dilated and did not react to light. Media clear. Both discs were enormously swollen—show-

ing about nine diopters of swelling with many hemorrhages, and with usual contortions of vessels in such condition.

O. D. Ext. rectus showed paresis.

O. S. ext. rectus paralysis with convergent squint.

Nasal examination and xray of sinuses negative. X-ray of teeth, urinalysis (repeated examinations) negative. Blood and spinal fluid Wassermanns, negative. Leucocytosis—20,000. Spinal fluid cell count 3, and under pressure,—with monometer, 26. (Normal anywhere up to 10.) Blood pressure, 128—80.

Neurological examination: Has atoxia of both hands. Knee jerks absent. No clonus.

Treatment: Although rhinologic was negative, we opened ethmoids and spnenoids. Negative pathological findings. However, the next day patient remarked that she was no longer troubled with rheumatism, and was free of it during her stay in hospital.

Vision did not improve and subjective symptoms of headache and nausea persisted. Two days later a temporal decompression was done by Dr. Brenizer. Soon all symptoms were relieved and vision began to improve and improved steadily until patient was dismissed from the hospital.

An examination of eyes April 6, showed: O. D. V.=20-100. O. S. V.=20-100.

Practically all retinal hemorrhages had been absorbed and there were only three diopters of swelling of both discs. Both external recti showed much improvement of function. Patient went home feeling fine, with useful vision and with a good chance of much better vision as time passes.

This is a case, probably of brain tumor; which Cushing tells us will be found much oftener if we only look for it. With refined methods of diagnosis they were found to be much more frequent, than old statistics indicated in the records of Johns Hopkins Hospital.

Other causes of choked discs are nephritis, syphillis, basilar meningitis, supperative sinusitis, and echinoccus cyst of brain, disseminated sclerosis, etc. These could be practically all ruled out in this case. Choked disc in brain tumor is present in about 80 per cent of cases.

Given a case with symptoms of headache, nausea and vomiting, we should make a careful examination of the visional fields. Dyschromatopsia (interlacing and inversion of the color fields) is a much earlier sign of brain tumor than choked dics. This sign can be easily demonstrated. In its most typical form, the blue field is interlaced and may become completely inverted with the red. There may be blue scotoma or a total achrom-atopsia for this color alone. And many other varieties conforming somewhat the type mentioned above. We have been taught that such perimetric findings are pecular to functional and hysterical states. That such color field changes are due to increased intracranial pressure has been shown by rapid restoration of normal color values in the fields of vision after relief of the pressure. So I would urge use of these examinations under such circumstances.

Of course, in the case here reported the possibility of any helps from tests dependent on good vision was precluded. But they could have been done earlier.

Given a desperate case of the character here reported, I would urge cranial decompression as an emergency measure to conserve vision. Then look for the cause later. This operation is not necessarily heroic or dangerous.

In conclusion, one purpose I have reporting this case is to emphasize the importance of ophthalmology as an aid to general medicine. The eye is an outgrowth from the primary forebrain, and is very closely related to many pathological brain changes. We are very fortunate in having many of our medical men quite alive to this fact.

Much valuable information can be had in the diagnosis of intracranial lesions in the earlier stages by use of ophtholmological examination, and we feel that it should be made use of more often in such conditions.

Note: Patient was seen finally on June 8th, 1920.

Vision: O. D. V.=20-40 minus 1. O. S. V.=20-70 plus 1.

Both discs had lost all their swelling. There was slight bilateral papillary palor. Both external recti had regained normal function. In fact, patient felt quite well.

DIFFERENT FORMS OF FOOD ADULTERATION.

W. M. Allen, Charlotte, N. C.

State Chemist of North Carolina.

Food adulteration had its origin in very early ages. Even when society was in a very primitive state there were knavish tricks in bartering, substitutions of bad for good and falseness of many kinds. There was not room for so much adulteration then for the food of the family was raised from the soil on which they then dwelt and was prepared for use by themselves and commercial frauds on a large scale had not developed. There are, however, records of ancient sophistications practiced by the Greek and Roman traders, but it was the Middle Ages that the most interesting types of these practices developed.

About the first fraud alluded to in the early writings was the adulteration of opium. The test was primitive and crude. If pure it burned with a clear, brilliant flame; if adulterated the flame was different. Its quality was judged by its behavior when exposed to the sun.

In some very early writings we find frauds practiced by bakers alluded to. They added to bread a white earth, soft to the touch and sweet to the taste, which was supposed to have been obtained from a hill situated near Naples.

The adulteration of wine in Athens necessitated a special inspector, whose duty it was to detect and stop such practices. Greek history mentions Canthon, who excelled in ingenious mixtures as he knew how to impart to new wine the flavor of aged wine. In Rome and Gaul wine was adulterated in the cellars with artificial color and flavor.

In Europe generally from the eleventh century on bakers, brewers and vinters were frequently accused of corrupt practices.

By the "Assize of Bread" during the reign of John the sale of bread was regulated in England, the regulation of the price, by limiting the profits of the baker so that the price of the loaf should bear a certain relation to the

price of wheat. The Assize of John's reign continued in force until 1286 when it was repealed by "The Statute of Assize."

There were various modifications of the assizes, and they were finally abolished in 1815. Though preventing adulteration with foreign substances was not the main object of the regulations, as time went on and the sins of the bakers accumulated, clauses with regard to the adulteration of bread with foreign matter were inserted and the later ones developed into the "English Sale of Food Act." The assize of 1582 contained the following: "If there be any that by false means useth to sell meal; for the first time he shall be grievously punished, the second time he shall lose his meal; the third he shall forswear the town and so likewise the bakers that offend.

The assize of 1634 contained stringent regulations with regard to musty meal. If there be any manner of person or persons, which shall, by any false ways or measure, sell any musty meal unto the king's subjects, either by mixing it deceitfully or sell any musty and corrupt meal, which may be to the hurt and infection of man's body, or use any false weights, or any deceitful ways or measures, and so deceive the king's subjects, for the first time he shall be grievously punished, the second he shall lose his meal, for the third offense he shall suffer the judgment of the pillory, and the fourth time he shall forswear the town wherein he dwelleth.

It is recorded in "Doomsday Book" that during the reign of Edward the Confessor that a knavish brewer was taken round the town in the cart in which the refuse of the place had been collected, and to that was added corporal punishment.

In many towns in the sixteenth century there were "ale-tasters" whose duty it was to inspect the beer. For example, the Mayor of Guilford ordered that the brewers make a good useful ale, and that they sell none of it until it be tasted by "ale-tasters." The ale was not only tasted, but it was otherwise tested. Some of it was spilt on a wooden seat, and on the wet place the taster sat, attired in leather breeches. If sugar has been added, the taster's leather trousers would stick to the seat; if sugar had not been added, the dried extract, having no adhesive property the trousers would not stick. In France and Germany during the Middle Ages as in England, the regulation of the sale of allimentary products applied almost exclusively to meal, drugs, wine and beer and the punishment in France was very similar to that of England except in France it partook more of the character of a religious penance. In Germany the punishment was decidedly more severe. All who adulterated food or drink were punished severely, with painful and dishonoring penalties, such as public exposure of the fraud and whipping at the gate. There are instances recorded where for adulterating food or drink the culprit was burnt at the stake or buried alive.

From these extracts we see that food adulteration and laws to prevent same are not wholly products of modern times, but are inheritances of early Middle Ages, but no interest was taken in the subject during the early years of this country.

About the first legislation of this nature in the United States was an act of Congress in 1848 to secure the purity of imported drugs.

In about 1877 laws to prevent the sale of adulterated food were passed

in some of the States like New York, Massachusettes, Michigan and New Jersey and chemists commissioned to investigate and report on the subject. Some most excellent work was done in those states and from time to time other states followed their example.

In about 1879 a bill for Federal regulation of food in interstate commerce was introduced into Congress and during the years following similar bills were introduced but opposing interests were so strong that not until 1906, after the horrible exposures of the Chicago and other packing houses could such bill be passed.

During the first hundred years of the history of this country practically no effort was made to prevent food adulteration and the sophisticator and adulterator of foods had full sway. Their actions were regulated only by their own conscience which if they ever had, became so paralized that their nefarious businesses were not interfered with much, and the food sold to the American people during that latter part of that period would have made a monkey blush.

Food adulteration was not so bad in the South as it was in the North and consequently the Southern States were slow to pass food regulation laws.

Our own good state was about the first to take such action and in 1899 passed a law which in 1907 was redrafted and passed and with some amendments is our present food law. So far as intentional adulteration is concerned the law is effective but not so much was known at that time about sanitation and from a sanitary standpoint it needs revision.

The Legislature passed a good law and made it the duty of the Department of Agriculture to enforce it without however providing any funds for the purpose. Practically the same thing followed in several of the other Southern States.

The funds of the Department of Agriculture were from an inspection tax on fertilizers and were therefore paid in by the farmers of the State. The Board of Agriculture, made up of farmers, did not see fit and would appropriate but little from a fund paid in by one class of people for the enforcement of a food law that would benefit them much less than it would the people who depended wholly upon bought food for their living.

For several years less than $2,000.00 a year was spent for all purposes of food law enforcement while many other states were spending from $10,000.00 to $40,000.00 a year for such work.

At our solicitation since that time other inspection laws like the oil and gasoline laws, the linseed oil laws and the bottlers plant inspection law, etc., have been passed that produce revenue for the enforcement, and by doing the food work in connection with the latter fairly reasonable funds are available for the food work, but no funds specifically for food work are provided.

But more to the subject, food is that which, taken into the body, builds tissue or yields energy.

Food is adulterated: If it contains any added poisonous or other added deleterious ingredient which may render such articles injurious to health.

If it consists in whole or in part of a filthy, decomposed or putrid animal or vegetable substance.

If any substance has been mixed or packed with it, so as to reduce or lower or injuriously affect its quality or strength.

If any substance has been substituted wholly or in part for the article.

If any valuable constituent of the article has been wholly or in part abstracted.

If it be mixed, colored, powdered, coated or stained in a manner wholly damage or inferiority is concealed.

Then the effect of adulterated food on mankind is studied from two standpoints. First, the effect on the health; and second, the effect on the wealth. A very small amount of adulteration will have a tremendous accumulative effect on either our health or our wealth. Then the adulteration of food comes under two general heads:

1st. Adulterants which are harmful or deleterious and effect health, and,

2nd, Adulterants which are fraudulent and only affect the cost.

The first may be divided into two classes: Those things that are of themselves, when added to food, deleterious or which when added to food render the food deleterious and are added intentionally in its manufacture to preserve it or to color it to improve its appearance, and those things which occur or get into the food incidentally in the manufacture of same, owing to the use of spoiled or inferior material or insanitary conditions under which it is manufactured or handled.

Under division one, sub-division one are chemical preservatives and poisonous coal tar and certain other mineral colors. When the food laws were first passed chemical preservatives such as benzoate of soda, borax, salicylic acid, certain sulphites and even formaldhyde were used premiscuously in all kinds of foods and many were colored with poisonous dyes. The object of the color was to deceive the purchaser.

Inferior, and even spoiled materials, were chemically preserved, artificially colored and flavored and sold as high class products and because of the flavor and color the true nature was not at all evident.

The use of these products was doubly objectionable. It made the use of more or less spoiled material possible that would otherwise have been easily detected, and, while the amount of the preservative or color consumed at any one time was so small that its poisonous effect on the body was negligible, it was enough to preserve the food and therefore to a certain extent interfere with the action of the digestive ferments of the body and retarted digestion.

Under food law enforcement, the use of these preservatives and coal tar colors in food have practically disappeared, but it was not without a fight, and a hard fight too, for they died fighting. It was difficult to get evidence regarding their effect on the body that the courts would accept. Actual test had to be made by the Referee Board. The test was a long tedious process and not very satisfactory at best, but the results all taken together showed preservatives in food to be more or less objectionable, and the results, while not conclusive, did aid in breaking up the practice.

Another kind of adulterants that effect health are bacteria and products

that are the results of bacterial action. They are not intentionally added to food, but get into it incidentally from the use of bad, decomposed material, or by careless or insanitary manufacture or handling.

I shall not attempt to discuss the possible effects of bacteria on health; that is the field of the physician, but will in a cursory manner refer to ptomaines about which, however, very little is known. They are of bacterial origin and are very poisonous. Not always but for some reason they are sometimes formed in the decomposition of organic matter. Ptomaines are formed only in nitrogenous matter, and rarely in matter except of animal origin.

Ptomaines are a class of arganic bases or putrefective alkaloids formed by the action of putrefactive bacteria on nitrogenous matter. Chemically speaking they are derivatives of ethers of the poly hydric alcohols. Some of them have been prepared synthetically. Authorities seem to differ as to whether they are all poisonous or not, but it is well known that most of them are exceedingly poisonous. But one thing that I wish to call to your attention is that ptomaines cannot be reliably detected chemically, that is, there is no chemical test for ptomaines, that can be relied upon. The only way to detect any of this class of poisons is to test same on a living animal. That may be done by either feeding the suspected specimen to the animal or by injection. It is our practice in the Food Laboratory to feed it to the animal.

It appears that almost any animal is sensitive to ptomaines. Cats, rats and guinea pigs are all desirable subjects. Rats being pests that will eat almost anything and fairly easy to obtain are used most, but Pussy has fared badly at times at our hands when we had to test for ptomaines.

A few years ago a catch of fish were allowed to get bad before they were pickled at Morehead City. Ptomaines were formed in them and before that fact was known they were pickled, mixed and packed with a large lot of good fish. When they were later put on the market several people were made ill from eating the fish. The matter was reported in the papers. We immediately secured samples. Some of the fish proved to be bad. By wire we had the shipper trace each shipment and stop sale of same until an investigation could be made. Samples from about forty barrels were obtained. Some of them proved to be bad while others were good; even different fish from the same barrel, one would be bad and another good. The bad were so mixed with the good that it was impossible to separate them and several hundred barrels had to be condemned and sent to the fertilizer factory.

We used chemical tests described in the books, as we had done before, but again found them unreliable. We examined them physically but after being pickled there appeared to be no positive difference in the appearance or odor by which we could tell the good from the bad. No salt fish smells good and if any smelt worse than any other we could not detect it, but some of the fish when eaten by a cat or rat would make it very sick from which, in some instances they died, while some of the other fish did not seem to affect them at all.

The packer of the fish was unable to account for the bad fish unless they

were mixed in with good fish by the fisherman from whom the fish were bought, so that they escaped detection.

Some of you no doubt saw in the Associated Press reports within the past few months, references to sickness and death in several instances, from the eating of infected ripe olives.

A government report shows that a shipment of these olives were seized first by the Food Inspector in Wisconsin. The government alleged that the olives were adulterated in that they consisted in part of a filthy, decomposed and putrid vegetable substance. Examination by the Bureau of Chemistry showed that guinea pigs fed on olives from the shipment died, indicating the presence of toxin due to decomposition of the olives by bacteria which were later identified as Bacillus botulinus. Olives similarly infected were responsible for the death of several people within the past few months in Canton, Ohio; Detroit, Michigan; Brooklyn, New York; Memphis, Tennessee and elsewhere.

Investigation showed that defective methods in processing, pickling and packing the ripe olives were responsible for the infection.

The government report further states that all the ripe olives to which trouble has been attributed were packed in glass and that the trouble was probably due, for fear of breaking, to insufficient heat to sterilize the products. The poison would of course develope in tin containers if they were not sufficiently processed, but as there is no danger of breakage in tin, a sufficient degree of heat is usually applied.

In all cases of botulinus poisoning investigated, the ripe olives showed signs of decomposition. They had odor and taste characteristic of decomposition that indicated that they were not sound. In some instances even where death resulted, the persons who served the olives and persons who ate them recognized that the olives were not sound.

Then, there appears to be no necessity for one to live in dread or fear of being poisoned by unconsciously eating dangerous food, or food in which ptomaines have formed.

There are, however, cases where the real character of the product is not evident from its physical appearance, a good example of which is a beverage containing ethyl and methyl alcohol. A beverage containing ethyl alcohol might contain a dangerous amount of methyl or wood alcohol without the presence of the latter being evident from its taste or odor, though the taste and odor of the methyl alcohol is quite different from that of ethyl alcohol. As is well remembered, only a few months ago there were a number of deaths from the use of methyl or wood alcohol in drinks. Wood alcohol is so deadly poisonous that it can't be used to any great extent as an adulterant or substitute for ethyl alcohol in beverages for it will tell its own story in very sad terms. However, there is another use to which it is put as an adulterant or substitute for ethyl alcohol, which, while objectionable, is not so fatal as if used in a beverage. That purpose is the use of it as a solvent in extracts, perfumes and lotions which, if taken internally at all, is in very minute quantity, not enough to tell the story at once, and this fact makes its use more possible for this purpose and in the long run, upon a whole, vastly more dangerous.

Another example of a substitute which is both fraudulent and deleterious to health and the presence of which in food is not evident because of its taste or odor, is the use of saccharin as a substitute for sugar. Saccharin as a substitute for sugar in food is far less dangerous to health than is true in the case of wood alcohol, so far as immediate results are concerned, but in the long run it is possibly an even greater curse because its effect is not so evident, which makes its use vastly more possible and much harder to prevent. As a substitute for sugar it plays a double roll, and if permitted by the food laws, its use would doubtless be carried to an enormous extent during the present scarcity and high price of sugar.

Saccharin is a Benzoylsulfonic imide, and while it is sweet, it has no relation to sugar at all. It is in no sense a food and supplies no energy or nutriment to the body when used in food. Its use as a substitute for sugar is not only a fraud but is more or less deleterious to health, according to the findings of the Referee Board, Food Inspection Decision 135, by the Secretaries of the Treasury, Agriculture and Commerce and Labor of the United States, adopted April 26th, 1911.

Another class of food adulteration consists of adulteration that is fraudulent only and does not affect health. It is adulteration that reduces or lowers the value or strength of the product without rendering same deleterious to health.

From the foregoing it is evident that food adulteration that is deleterious to health is of all importance, for life itself without health is hardly worth living. It has been said that that depends upon the "liver," and as physicians you know how important the "liver" is.

As so much depends upon health for our happiness it is impossible to compare the importance of the two classes of food adulteration, but I do desire to convey to you some idea of the importance of food adulteration from an economic standpoint.

It is estimated by food officials that in point of volume or frequency of occurrence that well above 95 per cent of the food adulteration in the United States is from an economic standpoint, the object of which is to gain by fraud in the substitution of a cheaper, or less expensive, or less desirable product for one of higher price.

If not of more importance to health and happiness of the human family, this class of food adulteration is vastly more voluminous than adulteration that is deleterious to health. It is a broader field and offers greater reward. Many dealers and manufacturers will accept profits from this class of adulteration that would not knowingly sell a product that was deleterious to health. In fact, it is sometimes hard to make even fairly intelligent dealers understand that a product can be adulterated and misbranded and its sale absolutely illegal, when if the same product be properly branded and represented to be what it actually is, and nothing else, that its sale is perfectly legal. They say, well, if it is adulterated forbid the sale of it and I will throw it back on the jobber or manufacturer. That dealer may be selling at retail, a compound vinegar or a skim milk cheese as vinegar or cheese, as the case may be, when the product as he bought it is properly branded but his customers never see the original package. Compound vinegar is not deleterious to health but it is not vinegar and is not worth as much as vinegar.

Vinegar is a product made from the juice of apples and has a delightful appetizing fruit flavor. Compound vinegar is made from almost any kind of waste sugar or starch material, like stale bread, etc. Skim milk cheese is a good food, rich in milk proteids, but it is not as good as cheese which is made from whole milk without having any of the fat removed. If sold as skim milk cheese the sale of such a product is all right, but it should not be sold as cheese.

Corn syrup is a good food but it is not as choice as cane syrup, so a mixture of the two should not be sold as pure syrup.

Cane syrup is a good food but it is not as choice and will not sell on the market for as much as maple syrup, and if it is added to maple syrup its presence should be made known to the purchaser.

Nut butter and oleomargarine are good foods but you don't want to pay the price of creamery butter for them.

These examples could be extended or multiplied almost indefinitely for, to be sure, for every high class food product there is some way of adulterating it or of substituting fraudulently some less valuable product for it and so doing it that the fact is not evident on the face of it. Even bread, the staff of life, has been greatly misrepresented. Low grade flour from which it was made was bleached to appear like a high grade.

As manufactured by modern machinery high grade flour is white and it is bought and sold on its color or lack of color. When a lower grade flour is bleached to appear like a higher grade it is misrepresented, unless the fact that it has been bleached is made known to the purchaser.

The law requires flour, if bleached, to be labeled bleached, so that the purchaser may know that it is not necessarily high grade because it is white.

Food officials have not had easy sailing in the development and enforcement of food laws. Every effort has been fought hard by those who profit by fraudulent practices in the adulteration and misbranding of food products. They have able chemists and lawyers to study their work minutely to direct and protect their practice.

Like the patent medicine people they are thoroughly organized and stand shoulder to shoulder. When you touch one you have touched all and the whole tribe is on you.

In conclusion, I will add that it is to be hoped that in the near future Dr. Rankin and the Board of Health may secure legislation that will require the proper branding of drug products.

I thank you for your attention.

BLOOD CHEMISTRY IN NEPHRITIS.

Dr. W. M. Copridge, Durham

Researches in biological chemistry have within the past few years added much to our knowledge of pathological conditions. Almost no department of medicine has missed the benefits of the work of such men as Folin and Dennis, Dakin, Meyers and others. In the diagnosis of nephritis we find we have been especially favored by the researches in the so called "Micro-Chemical" methods of blood analysis. The subject of nephritis has received

new light where our knowledge of the subject has been perhaps most disastrously clouded, and that has been in the early diagnosis of the conditions.

Formerly physicians have used, most largely, the chemical and microscopical examination of the urine as an index to the extent of pathology in the kidney. The limitations of these methods have long been known. It is a fact that the work an organ is doing cannot be entirely interpreted by the evident extent of pathology in that organ. Again, the demonstrable pathology of the organ is not always in proportion to the work the organ is doing. McQuarrie and Whipple have shown that in proteose intoxication the renal function is very markedly lowered without any demonstrable anatomical lesions in the kidney. So we have come to realize that the interpretation of albumen and casts in the urine is usually that of pathology in the kidney but now we know that we can little judge the function of the kidney by the presence or absence of them.

Since the time of Bright many attempts have been made to estimate the amount of work the kidney is doing, by the use of some substance that may be given in measured amounts and can be recovered in definite amounts in the urine. To this end, many substances have been used—Methylene Blue, lactose, salt, water and many others. Roundtree and Geraghty in 1910 introduced phenolsulphonpthalien for this purpose. Without any doubt this method of studying renal function has been the most generally useful and must be considered a great step forward in these studies. It seems that it is the best substance yet derived for fairly accurately determining, for the time, the work the kidney is doing. It does not tell us that the kidney is excreting a measured amount of the dye hour by hour and day by day over any considerable period. Neither does it tell us that the kidney is handling the substances such as urea, creotinine or uric acid, in the same proportion that it excretes the pthalien. So, as valuable perhaps as any excretory test may be, the pthalene test has its limitations. The idea of examining the blood for evidence of renal impairment was conceived many years ago. The methods used did not permit of any practical use until 1913 when Folin and his workers devised the comparatively simple methods now in use. The work of Meyers and Fine, Mosenthal, Marshall, McLean and others have shown the great practical value of the methods in the early diagnosis of nephritis and also of the prognosis of the disease. Generally in uncomplicated nephritis, the blood chemistry findings have run parallel to the phalian test again emphasizing the great value of the latter. In some cases, however, the Chemical analyses have shown that the pthalian test cannot be relied on for the same extent of accuracy as the chemical examination of the blood.

In general the examination of the blood for evidence of impaired renal function has been concerned with the ammonia nitrogen, total nonprotein nitrogen, urea, uric acid and creatinine. It has been found that the latter three—the urea, uric acid and creatinine give more information. Studies in blood urea probably superceded uric acid and creatinine, it naturally being thought that since the bulk of the nitrogenous waste was eliminated in the form of urea, that in cases of impaired kidney function retention of this substance would serve as an index to the extent of the injury.

Marshall, by the introduction of his urease method of determining the urea of the blood, made it possible for this test to be done with ease in a very modestly equipped laboratory. McLean has called attention to the value of

comparing the blood urea readings with the urea content of the urine, much in the same method as that of Ambard. This method seems to be very much to be preferred when considering the question of urea. We know that diet, exercises and other factors play an important role in the urea content of the blood. The amount of urea in the blood therefore varies through fairly wide limits even though the kidney may be excreting a normal amount of the substance.

The part which the liver plays in the production of urea is unquestionably a large one, whether all of the urea is formed in the liver or not is an open question with the favor being on the side that the muscles and other tissues do form possibly a small amount of the substance. Shroder, with experiments on dogs has done much to show that the liver forms most of the urea. Pawlow has shown that when the liver is practically destroyed the urea in the urine is greatly diminished. It seems, therefore, that the activity of the liver must also be considered in interpretating blood urea readings.

We have, in the Watts Hospital laboratories, felt that in certain cases with low blood urea readings where renal functions was definitely low, we have been able to ascribe such a condition to injury to the liver. One case in particular which seemed to carry this point, was one of bichloride poisoning. About 30 grains of bichloride had been ingested about 24 hours before the observations were made. The urine was scanty, loaded with albumen and casts, with the pthalien practically zero in two hours. In such a cases even with so short duration we would certainly have expected blood urea readings considerably above normal. As a matter of fact the urea was decreased, being between 15 and 20 milligrams per 100 cc. of blood whereas the normal lies between 20 and 40 milligrams. This reduction we ascribed, without any direct proof, to liver injury due to the bichloride, resulting in a decrease in liver function coincident to the kidney injury and resulting decrease in kidney function.

In cases of toxemia of pregnancy we have found at times the same occurrence. We have seen cases with very low pthalien outputs with blood urea figures about normal or below. Knowing as we do that liver injury is very often severe in these cases we have again ascribed the low blood urea reading to low liver function. In several cases we have felt that the blood urea estimation has helped us to differentiate the cases of acute nephritis complicating pregnancy, from the cases of true violent toxemia of pregnancy. In this last group the urea of the blood is not markedly increased although the kidney function as measured by the pthalien test may be as low as 10-15% in 2 hours. We have noted that the outcome in such cases not so favorable as the cases showing low pthalien with high blood urea—showing as we believe that the cindition in the latter cases is an acute nephritis which is probably not complicated with liver injury. As, I have said above, these observations have been only clinical in their nature and have been made on a comparatively small series of cases and therefore may be erroneous if analyzed experimentally. Nevertheless, they have practically convinced us that in cases with severe liver injury the blood urea reading will very probably be low. We feel that in several cases of suspected toxemia of pregnancy the blood urea and pthalien tests have helped us to decide which cases were really acute general toxemia of pregnancy and those of acute nephritis complicating pregnancy.

In chronic nephritis and in acute uncomplicated nephritis the blood urea is usually increased very often to 100 or more times the normal. These cases usually, but not always show a corresponding decrease in the output of pthalien. A very interesting case was reported by Halsey in which the urine showed no albumen or casts and the patient in apparently very good condition. Examination showed a zero pthalien output with tremendous nitrogen retention with death in about 3 weeks.

The variability of the blood urea has called for the introduction of the estimation of the other more constant substances of the blood. Uric acid of the blood is derived partly from exogenous sources but also from enogenous sources as well. It is claimed by Chase and Meyers uric acid is the most difficult of any of these substances for the kidney to excrete. They report that in consequence of this fact uric acid is the first substance to be retained in case of kidney injury that it is the most valuable test in order to determine the incipient cases of nephritis. Their observation is to the effect that creatinine is the easiest substance for the kidney to eliminate and accordingly place very high prognastic value in the creatinine estimation. A high creatinine reading being indicative of severe and probably fatal kidney injury.

It is a well established fact that practically all types of nephritis are accompanied by an increased hydrogen content of the blood. The retained products in nephritis seem in some way to depress oxidation in the tissues to the extent that half way products of an acid nature are the results. Often this retention of acid becomes of serious import—a vicious circle being formed—the retention of acids causing more kidney damage and vici versa. It is therefore of importance to know the degree of acidosis. There are several ways in which this may be determined. The carbon dioxide content of alveolar is perhaps the best index. For this determination Marriott has devised a simple method and Van Slyke has devised a more elaborate method in which the carbon dioxide combining power of the blood plasma is determined. In practically all cases of nephritis these tests show some degree of acidosis. A very simple and perhaps crude method of determining the degree of acids is that of Sellards in which we administer sodium Bi Carbonate in 5 grams doses—normally this amount of sodium bicarbonate will cause the urine to become alkaline. If after the ingestion of this amount of substance the urine remains acid, it is indicative of an acidosis.

The practical importance of the blood chemistry analysis is hardly to be overestimated. Very often cases supposed to be mild cases of nephritis will be found to be serious when studied by these methods. Impending uremia may often be prevented when it is recognized early and the patient is taken thoroughly in hand.

We believe that one of the most fruitful fields for more careful study of kidney conditions is in pregnancy. There is no more distressing class of cases than those in which the pregnant woman apparently suddenly goes in to a state of acute toxemia. Whether the exiology of the condition lies primarily in the kidney or not it is certain that the prognosis is much better when the kidney condition has received attention all thru the term. With the function tests and blood chemistry we are enabled to fairly accurately ascertain the extent of kidney injury early in pregnancy and to prevent in a large number of cases the serious renal complications. It is certain that fre-

quent blood chemistry analyses combined with the pthalien test will act as an excellent guide to the prophylaxis and treatment of the condition. We have in the past month seen a case of a pregnant woman of 3 months duration, who according to her physician had shown no albumen in her urine previously, and after eating a hearty meal at night went into toxemia with convulsions the following day. In such a case it is quite possible that had facilities allowed her physician to have had kidney function and blood chemistry analyses on his patient, her true condition would probably have been known and the proper prohylaxis adopted. Incipient or early nephritis is of interest to the surgeon as well as medical man. Blood chemistry analyses will often help the surgeon in his decision as to whether "the kidneys can stand an anesthetic." It is possible that the surgeon can materially lower his percentage of cases or uremia following ether or chloroform if he is assisted by blood chemistry analyses in making his decision.

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2. Meyers and Fine—Journal Bialogical Chemistry, 1915 Vol. XXL, pp. 389.

3. Mosenthal and Lewis—Journal Am. Medical Assn., Sept 23, 1916., Vol. LXVII, No. 113, pp. 933.

4. Marshall—Journal Bialogical Chemistry, 1913, Vol. XIV, page 283, Ibid, 1913, Vol. XV, pp. 287 and 495.

5. McLean—Journal Am. Med. Assn., Feb. 5, 1916, Vol. LXVI, No. 6, pp. 415.

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7. E. H. Halsey—Journal Am. Med. Assn., June 10, 1916, Vol. LXVI, No. 24, pp. 1847.

8. Chase and Meyers—Journal Am. Med. Assn., Sept. 23, 1916, Vol. LXVII, No. 13, pp. 929.

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SURGERY

ACUTE PANCREATITIS RESEMBLING ACUTE INTESTINAL OBSTRUCTION REPORT OF CASES.

EUGENE B. GLENN. ASHEVILLE, N. C.

Mr. President and Gentlemen:

Deaver stated in 1918 that he believed it is no exaggeration to say that acute pancreatitis is more often unrecognized than it is diagnosed before operation, in the first place, because it is comparatively infrequent, and there is no sign of symptoms that can be said to be pathognomonic of the disorder. Generally the desperate condition of the patient makes operation imperative without the formality of a definite diagnosis. Also, acute pancreatitis is associated with cholecystitis, perforating cholecystitis, perforating gastric or duodenal ulcer, appendicitis, etc.

As a predisposing factor, obesity and alcoholism are some times mentioned. Age and sex do not seem to play a part. While somewhat more common between the ages of 25 and 50, it occurs at all ages. McPherdan reports a case 9 months old. In 91 cases analyzed at to sex, there were 59 males and 32 females, while in Deaver's series of 15 cases, 11 were females.

In 1889, Fitz named, defined, and classified acute primary interstitial pancreatitis, a disease the effects of which have been recognized since 1641.

Douglas states that neither the character of food nor the manner of eating, syphilis, or occupation can be regarded as predisposing causes.

The frequency with which pancreatitis occurs in obese patients, a large portion of whom become rapidly fat, has led to the probably erroneous suggestion of a casual relationship. Robson asserts that the immediate cause of the various forms of pancreatitis is bacterial infection, clinical observation and clinical work in a great measure sustain this position. In numerous instance, the most careful bacteriologic search has failed to demonstrate the presence of micro-organisms even after a fatal, destructive pancreatitis. These notable exceptions justify us in accepting with some reservation the sweeping statement that pancreatitis is always an infection process. Reasoning by anology, it is probably true, yet unproved.

"A sudden acute abdominal seizure, pain overwhelming, in an apparent healthy, usually obese individual, accompanied by incessant vomiting, upper abdominal distension, a transverse resistance not easily elicited, weak pulse, sub-normal temperature, collapse, and sometimes cyanosis, should suggest acute pancreatitis." (Deaver.)

Osler quotes Fitz and says: "Acute pancreatitis is to be suspected when a previously healthy person, or sufferer from occasional attacks of indigestion, is suddenly seized with a violent pain in the epigastrium, followed by vomiting and collapse, and in the course of twenty-four hours by a circumscribed epigastric swelling, tympanitic or resistent, with slight elevation of temperature, circumscribed tenderness in the course of the pancreas, and tender spots throughout the abdomen, are valuable diagnostic signs."

Edsall, of Philadelphia, thinks that all urinary tests combined have little value in suspected pancreatic disease, as contrasted with careful clinical consideration of the cases. The only test that appears to him to be of any real value is that for Glycosuria, and this is in very many cases negative. If positive, however, especially if there are focal abnormalities present, the results add decidedly to the evidence in such cases.

On account of the obstinate constipation at first, in the acute cases, it is hard to obtain a fair specimen of fecal contents.

Patients in whom the extravasation of pancreatic juice has caused fat necrosis are least likely to recover.

The surgery of the pancreas must be directed to providing an escape for the highly toxic pancreatic fluid; in other words, the pancreas must be drained.

Deaver is not always in favor of operating in a state of profound shock; he deems it wise to wait for a short time, in order to give the patient a chance to rally, and to wait for the peritoneal inflammation to localize. In the interim, Murphy-Fowler-Ochsner method treatment is instituted.

Early operation is desirable. The presence of blood fluid exudate in the pancreas requires incision and packing with gauze. Too free and indiscriminate an incision presents the danger of free hemorrhage, difficult to control. Scarification of the peritoneum over the gland, should, however, be sufficient to allow gauze drainage to be brought into direct contact with the surface. A few blunt punctures of the pancreas are of service in providing free exit for the contained blood, lymph, and the obstructed secretion.

Two routes may be chosen, the transperitoneal or the extraperitoneal, through a loin incision.

One of the most troublesome post-operative effects of drainage in acute pancreatitis is the formation of sinuses. Irritation of the skin over which the discharge flows may be avoided by protecting the skin with a bland ointment. In order to limit the activity of the pancreas, a strict anti-diabetic diet is found useful in promoting healing.

It is difficult to make a differential diagnosis in acute pancreatitis with any degree of certainty, because there are several other violent acute conditions which are so similar in their symptoms that they can probably never be positively excluded. The conditions most likely to be confounded are, (1) perforation of the posterior wall of the pyloric end of the stomach; (2) perforation or gangrene of the gall-bladder or duodenum.

Cases of severe acute pancreatitis have been diagnosed as acute intestinal obstruction, renal colic, ectopic gestation, and, of course, appendicitis and gall-stone colic.

(Ochsner) In acute pancreatitis the pain is extremely severe in the right upper quadrant of the abdomen. There is intense shock; nausea and vomiting are usually present, and the patient gives the impression of being on the verge of dissolution. The abdominal muscles are tense, although Monihan found this symptom absent in some of his cases. There is usually a history pointing to gall-stone colic in previous milder attacks.

If a tumor be felt, there is usually tympanitis on percussion over this surface, because the gland is located behind the duodenum.

Cyanosis has been observed by Opie and others. Sugar is present in the urine in some cases. Egdahl gives a careful review of 107 cases in his study of the symptoms and diagnosis of acute pancreatitis which is well worth the careful consideration of the clinician.

REPORT OF CASES.

CASE.—Mr. E. W. C., aged 32, occupation civil engineer, weight 140 pounds. Entered hospitatl October 23rd, 1919. Diagnosis acute intestinal obstruction had been made and patient was referred for immediate operation, to relieve the obstruction. Two years previous he had been turned down for life insurance and one year previous for admission in the Navy, on account of sugar in the urine. He had suffered during this time with attacks of epigastric pains or colic. Two weeks previous to the attack, he had the "flu," but did not go to bed for two or three days at the onset. Six days before coming to the hospital, he was suddenly seized with severe cramp-like pains. Thought at first that it was an attack of acute indigestion. But when vomiting kept up and constipation resisted all treatment, a diagnosis of intestinal obstruction was made and he was sent to the hospital for immediate opperation for obstruction. While in the station at Asheville, on the way to the Meriwether Hospital, he collapsed. When he reached the Hospital, at 7 p. m. his temperature was 96 2-5, pulse 140, respiration 42. Last bowel movement was on October 18th, five days previous. Vomiting had become less frequent, but was regurgitant and of a dark brown or black appearance, but not stercoral. Hiccoughing was persistent, general tympany was present, although there was a marked localized distension of the epigastrium. The patient expressed a sense of fullness and distension. A marked cholemia was present. Palpation was made difficult on account of the epigastric distension and great tenderness. A deep lying tumor-like mass could be felt with some difficulty, above the umbilicus. Urine showed large amount of sugar, small amount of albumen, small amount of blood, numerous granular casts, Indican normal, acetone positive, specific gravity 1030, reaction acid.

A high asafoetida enema was given and a few small particles of fecal matter and a large amount of flatus was expelled. Examination of material returned showed a few fat droplets.

A diagnosis of acute pancreatitis was made, but on account of the profound shock, no operation was attempted. Patient complained of intense thirst, a smothering feeling, and a slight headache. He became restless, tried to get out of bed, developed involuntary urination, expelled Murphy drip, breathing became shallow, pulse very weak, and lived only 18 hours after he was admitted to the hospital . He vomited a laarge amount of black coffee ground fluid the last thirty minutes before he died.

CASE 3.—Mr. P., age 56, weight 250 pounds, well-to-do farmer. Previous history negative except that he had suffered with light attacks of acute indigestion. He was a big eater, particularly at his evening meal.

The day previous to the onset of the attack, he rode on a wagon, worked hard all day, ate a hearty supper, and slept well during the night. Got up in the morning feeling as well as usual, began dressing, and while stooping over tying his shoes, he was seized with the most frightful paroxysmal pains in the epigastrium, followed by nausea and vomiting, associated with extreme shock.

The family physician was called and a diagnosis of acute intestinal obstruction was made. The pain was so severe and shock so profound, that the physician thought he was "going out" in spite of all he could do. He was brought to the Hospital 18 hours later. The vomiting was copious at first, of a dark green bilious character, later a dark brown, but not stercoraceous. Hiccough was absent.

A high S. S. enema was given after entering the Hospital, and some particles of fecal matter and gas were expelled. The patient had not voided since the onset of the attack, and catheterization showed ten ounces of urine in the bladder. Urine acid, specific gravity 1028, albumen positive, sugar negative, Indican slight, many hyaline and granular casts.

Being positive that we were not dealing with intestinal obstruction, it was decided that we had a case of acute pancreatitis. It was evident that unless he could be reacted from the extreme condition then existing, an operation would be a useless procedure. There was almost a total anuria during the next twenty-four hours, in which time there developed a looseness of the bowels, with a very offensive odor, dark green in color. Examination showed fat in the stool. The epigastrium was very much distended. There was a circumscribed tenderness in the region of the pancreas, extending into the left loin, with tender spots about over the abdomen.

The pulse were frequent and irregular, and almost imperceptible. The temperature, slightly elevated on admission, dropped to sub-normal, a few hours later rising to 101. Lowest temperature 97, highest 101.

There was an extreme mental lethargy, followed by a low grade delirium. A mild jaundice appeared in the second twenty-four hours, with bile, sugar, and a large amount of acetone in the urine.

His condition grew steadily worse, and he passed away in a little more than seventy-two hours from the time he entered the Hospital.

Autopsy showed some free blood stained peritoneal fluid. The gland was enlarged, soft and succulent. It had a dark reddish-brown color. The duct and its ramifications contained blood and icterus fluid, the gall-bladder was distended, but no stones present. Several round, opaque areas of disseminated fat necrosis were found upon the mesentery and omentum and extraperitoneal fat adjunct to the pancreas. There was an acute cellular infiltration of the connective tissue of the organ, with an extensive necrosis of the lobules. Bacterial examination was negative.

CASE 3.—Mr. W., age 52, weight 230 pounds, occupation foreman. Went to church on Sunday morning and while on the way back home, only a short distance from the house, he was attacked by a sudden upper abdominal pain, overwhelming in character, accompanied by incessant vomiting, with upper abdominal distension, weak, rapid pulse, sub-normal temperature, collapse, and slight cyanosis. He had always been well, and this was the first time he had ever needed to call a physician. He gave no history of previous indigestion or epigastric pains. The family physician was called. He did all in his power to relieve the man, and after he had utterly failed to move his bowels, check vomiting and relieve hiccoughing, he concluded he had a case of intestinal obstruction.

The patient was placed on the train during the second twenty-four hours and brought to the Meriwether Hospital for immediate operation for obstruc-

tion. A high S. S. enema with 1-2 ounce tincture of asafoetida added resulted in a large, soft, brown, liquid stool and a quantity of flatus. The stool contained fat droplets.

Temperature on admission was 99, pulse 124, respiration 36. Hiccough was continuous. There was a limitation of diaphramatic movements. There was deep seated epigastric pain, increased by firm point pressure, over the splenic area, which extended around toward the left loin. Tympany was becoming general, with points of tenderness over the abdomen. The transperitoneal route of operation was chosen. The entire gland was enlarged and the head of the pancreas contained a dirty green fluid. Areas of fat necrosis was disseminated throughout the mesentery and omemtum. The pus contained the bacillus coli communis.

The abscess cavity was drained in the usual manner. The hiccoughing persisted. There developed a looseness of the bowels, with a very offensive odor.

The urine before operation was clear amber, specific gravity 1032, acid, albumen large amount, sugar large amount, Indican medium amount, acetone medium amount, casts, small number of Hyaline and coarsely and finely granular. Day after operation urine down from 1032 to 1018, sugar and albumen about the same, Indican negative, acetone had increased to large amount. Cell count dropped from 21,000 to 16,000. Sugar continued to increase, albumen and casts diminished. There was a large increase of sugar and acetone on the 14th day. He died on the 16th day after the operation and the 19th day of the attack.

Autopsy showed the gland to be swollen and the right half of head dotted with numerous yellowish-white spots and prominences arranged indiscretely. The left half had a dark reddish-brown appearance throughout.

Diagnosis of pancreatitis was not confirmed either by operation or autopsy in the first case. I am of the opinion that it was a sub-acute or chronic pancreatitis of about two years duration, with an acute termination, probably influenced by the recent "flu" infection.

The second case was one of acute hemorrhagic pancreatitis, with profound shock and rapid termination.

The third was a case of suppurative pancreatitis, although there were evidences of pancreatic hemorrhages. The suppuration did not necessarily precede or accompany the hemorrhages.

Osler says that intestinal obstruction or acute perforating peritonitis is usually suspected. He reports a case admitted to the Johns-Hopkins Hospital illustrating the common mistake. The young man had symptoms of intestinal obstruction for three or four days. The abdomen was distended, tender, and very painful. He says: "I saw him on admission, agreed in the diagnosis of probable obstruction, and ordered him to be transferred to the operating room. Halsted found no evidence of obstruction, but in the region of the pancreas and at the root of the mesentery, there was a dense, thick, indurate mass, and there were areas of fat-necrosis in both mesentery and omemtum. Oddly enough, this patient returned four years later with another attack, but he refused operation and his friends took him away."

DISCUSSION OF DR. GLENN'S PAPER

DR. JAS. M. PARROTT, KINSTON: I wish Dr. Glenn had given us some details as to the condition of the teeth and tonsils, of the ears and sinuses, in these cases. Perhaps he will do this when he closes the discussion.

DR. J. W. TANKERSLEY, GREENSBORO: Dr. Glenn's paper is too interesting to go by without discussion. Personally, I have never had any experience with acute pancreatitis, but I have seen several cases in operations on the gall bladder and other abdominal organs. The question of primary infection has engaged my attention, and the question is, is it a primary pancreatitis or is it secondary to some infection elsewhere, as Dr. Parrott suggested, an infection of the teeth or sinuses, or, more important in my opinion, an infection of the gall bladder or other pelvic organs. There have been several theories advanced. It has been demonstrated that bile, if injected into the head of the pancreas, will cause acute pancreatitis. Bile as injected from the gall bladder does not cause it. Therefore, if the gall-bladder is not functioning we have the possibility of infection. Another source of infection is hæmic. We all recognize that source, and I believe that to be the only primary source of infection in the pancreas. Another source of infection is the lymphatic. Frequently we run across these cases of pancreatitis. I say frequently—they are not frequent. If we pay more attention to the pancreas we shall run across more cases. The cases are subacute or chronic, and I believe in most cases they come from infection of the gall-bladder and possibly from the appendix. I have seen cases of deaths which came from acute pancreatitis. One was an exacerbation of a chronic condition which existed previous to a gall-bladder infection. They presented the typical picture previous to death which Dr. Glenn set forth.

I was interested in Dr. Glenn's paper, I think it was excellent, and I would like to hear more discussion.

DR. JAS. M. PARROTT, KINSTON: We have Dr. Southgate Leigh, of Norfolk, and other distinguished visitors with us today, and I wish to move that the courtesies of the floor be extended to them.

This motion was adopted.

DR. GLENN, closing the discussion: I was in hope that Dr. Leigh and Dr. Royster would have something to say about this paper.

There are two things that impress me which I did not bring out in the paper. One is the fact that when you have complete intestinal obstruction, the use of the enema will always result in failure to obtain expulsion of gas. You must be careful to see that all of the air is out of the hose going from the syringe. Always in testing thoroughly for gas, have the stream of water running when introduced into the rectum. Another distinct difference is in the vomiting of pancreatitis. It never becomes stercoraceous in pancreatitis, after a while it becomes regurgitant, some times a dark brown color. Another thing, too, most striking, is the profound shock, pain, and collapse in acute pancreatitis.

After you have seen a few cases, you can hardly be mistaken in the diagnosis.

SAVING SUPPURATING INCISIONS.

HUBERT A. ROYSTER, M. D., RALEIGH, N. C.

A plan for preserving abdominal incisions, which have suppurated deeply and preventing them from breaking down, has been employed in my hospital services for several years. The results have been so encouraging that the technique is herewith presented with confidence. Most frequently, the method is applicable to appendiceal incisions, but it may also be used in infected wounds of any kind.

The fundamental question of drainage enters at once into our consideration. Some of us have come to believe in the reverse of the old motto and when in doubt we do not drain. The perfectly frank suppurating abdomens require an outlet; these admit of no doubt and we drain them. But the cases concerning which we are in doubt rarely ever require a drain, because the condition is mind, not convincingly infectious otherwise we would not be in doubt. The abdomen may be closed with safety, yet there are many good surgeons who continue to put in drains when they find murky serum in the cavity or are confronted with gangrenous appendix even when it is enveloped in omentum and unruptured.

There have been three steps in the advancement of surgery. Formerly we operated to save life; later we operated to save time. The economic side of surgery is most important. The greatest loss of time from abdominal operations occurs in cases that are drained, so that any method that reduces the confinement period to a minimum is desirable.

Where drainage is needed it becomes a matter of great economic value to use stab wounds outside of the incision rather than to place a drain through the incisions. When this is done, in eight out of every ten cases the wound is kept intact and heals perfectly, while drainage is efficient and safe.

In some of the types referred to as doubtful in which the abdomen is closed, the wound suppurates, though the abdominal cavity remains free from infection. It is well known that the resisting power of the tissues of the abdominal wall is not so strong as that of the peritoneum. One is not surprised therefore when a leaky appendix is smeared over the open wound or a tight one ruptured in lifting it out, to observe a swollen and tender area around the incision four or five days later. As a rule the focus of this infection is under the aponeurosis and within the fibres of the internal oblique muscle. If the incision is closed loosely, suppuration is not so apt to result.

Supposing now that the wound has suppurated, as described, we will be apprised of its occurrence by continued pain near the incision, a possible rise of temperature, and, on inspecting the region an edematous, bulging area to one side or the other of the incision. In the McBurney incision this swollen area usually is seen to the outer side of the wound. (Fig. 1.) As soon as the condition is recognized, a small spot of skin at the most prominent part is injected with a local anesthetic and a bistoury plunged deeply downward and inward. Through this small stab the pus is evacuated. (Fig. 2.), aided by pressure upon each side. When the small cavity is emptied a quantity (equal in amount to the pus removed) of a ten per cent melted iodoform-vaseline ointment is introduced by means of glass syringe. (Fig. 3.) This distends the cavity fills the interstices and solidifies on cooling. A cold wet

compress is immediately applied over the whole area, and an ordinary dressing over this. As a rule, the wound is not disturbed for four days, when on removing the dressing the incision and the suppurating area will be found clean and intact. Slight pressure will cause any excess of ointment to exude and another cold compress may be put on. If before the fourth day a discharge be noted through or around the dressing, the wound again may be emptied by pressure and a second injection of the ointment made, following the same plan in the after-treatment as outlined above.

The only advantage of the iodoform is its odor which counteracts that of the colon bacillus in the pus. The melted ointment method is not new with me or possibly to others. As long as twenty years ago I used it in the treatment of suppurating buboes and ischio-rectal abscesses * and have continued to employ and recommend it ever since with the utmost satisfaction. Other substances beside iodoform may be incorporated with the vaseline; but having tried many different powders I still prefer iodoform. In this type of cases it is certainly superior to bismuth which came into vogue for other purposes much later. It is admitted that simple vaseline would be sufficient in many instances except for the absence of deodorizing qualities. Before introducing the ointment the wound cavity may be washed out with Dakin's solution or a weak dilution of hydrogen dioxide. We have not found this to be essential.

DISCUSSION OF DR. ROYSTER'S PAPER.

Dr. A. G. Brenizer, Charlotte: Practically all the men in the base hospitals in the war had an opportunity to close a lot of wounds. Our practice in making the secondary sutures was to disregard practically everything but the gas bacillus, the streptococcus, and the tetanus bacillus. The wounds were frequently treated with wet compresses, or letting whatever pus formed escape through the suture holes. Without the use of Dakin's, without any antiseptics at all, the closings were just as successful as if treated with Dakin's. I do not believe with Dr. Royster that it is necessary to make a stab at the side of the wound, and I do not believe the ointment helps much. I believe that the evacuation of the pus would possibly do about as well. I have not had experience with the ointment and I do not know whether or not Dr. Royster ran parallel cases, but I would be surprised if the antiseptic ointment did very much good.

Dr. T. C. Bost, Charlotte: This question of drainage is a very important one. The late war, among other things, has taught us a lesson in not draining. The whole practice is swaying toward the non-drainage side and I am sure it is a step in the right direction, but I think the fact remains that when we are in doubt we should drain. It is a fact that the less experienced man will be more in doubt when to drain. The more experienced men, of course, will be in doubt sometimes, and I think it is up to them to drain in doubtful cases. Notwithstanding the fact that drainage, if unnecessary, will produce a certain amount of harm and that in the absence of drainage we minimize the possibility of adhesions and with drainage we invite the possibility of external contamination, in these border-line cases I

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think we shall do more harm by not draining than by draining, regardless of who treats them.

Dr. J. T. Burrus, High Point: I rise more to a question of personal privilege than to discuss the paper.

In the first place, I wish to come before you and ask Dr. Long's and Dr. Royster's pardon for the somewhat vehement attack which I made upon a paper of a similar nature in Durham several years ago. I think that Dr. Long presented a paper at that time upon the question of drainage. I am sure that he and Dr. Royster were right at that time and that they are right now, and equally sure that I was wrong. However, I maintain this, and that was the position which I endeavored to occupy at that time, that in the hands of men who have had an unlimited experience—Dr. Henry Long, Dr. Highsmith, Dr. Royster, Dr. J. W. Long, and men who have done an immense amount of work—there is a difference in degree in the question of drainage. They know when to drain and the kind of serum or exudate that can be safely enclosed. But take the young man, who is just beginning, a man who has not had a large experience, and perhaps the safest thing for that man to do is to drain. So the difference would be in the degree of experience that the men have had.

I am not familiar with the method of handling wounds according to Dr. Royster's idea. I believe that if pus or fluid accumulates in the abdominal wall the only question is the question of drainage. I do not see why that should not come out through the first or primary incision as well as in opening up a new field. Again Dr. Royster may be right and may be a pioneer, and if so, when this question comes up again in six or ten years, I shall be very glad to come up and thank him for the teaching. It is very important and I think that our greatest prerogative is not to have trouble in surgical wounds, and I believe that we are now living in an age when we do not have very much trouble with them—that is, when the wounds are clean primarily. In the years 1917 and 1918 it was my privilege to do and to witness a large number of incisions made primarily, and when we made these wounds and were careful with our antiseptics I do not recall a large number of cases wherein there was an accumulation of pus or where the wall was primarily infected.

I thank you very much.

Dr. Southgate Leigh, Norfolk, Va.: I was very much impressed with Dr. Royster's ingenious procedure, though I have never used it. I was rather surprised not to hear him speak of dichloramin-T, for it seems to us that that is the very best antiseptic for promoting the healing of soiled wounds. Our experience has been very satisfactory. I do not recall a single case in which the wound has failed to heal when we have sprayed it thoroughly with dichloramin-T in five or ten per cent solution and then closed it up with the solution in the wound. We always sponge these wounds with bichloride, also.

I cannot agree with the doctor that when in doubt we should not drain. I am very much afraid that is a dangerous doctrine. I expect the best plan to follow is to imagine ourselves in the place of the patient and then decide what we would want done. I do not believe there is a man in this room who would want a wound closed in his own abdomen if he were in doubt,

and I think that applies to all of us—those who have had considerable experience and those who have not. Of course the reason for closing up the wound is to save time. In suppurating appendicitis, if you will make a transverse incision, cut the muscles at the other end, and spray the wound thoroughly with dichloramin-T, you will get a good result. There will not be much delay in the healing on account of the small sinus.

I hope we shall hear something about dichloramin-T and about the use of Dakin's solution, for they are wonderful helps in surgery. The war has done that much for us. Dakin's solution, made exactly in the way advised by Carrel and Dakin, applied practically constantly, at least every two hours day and night, to the wounds will hasten tremendously the healing of the wound. I believe that in suppurating appendix cases we are cutting short the hospital time by at least two weeks by the use of Dakin's solution.

Dr. J. W. Long, Greensboro, N. C.: Dr. Royster's treatment, which he has presented to us so clearly and forcefully, appears to be addressed to the incision itself and not to the deeper parts. His method, which he describes in his characteristic facetious style, may be paraphased as a "superficial salvage of suppurating smells." Dr. Royster merely iterates a truism when he says that the tissues of the incision are far less able to take care of infection than is the peritoneum.

Now, as to the merits of the method described by Dr. Royster, I wish to say that it is a most excellent procedure. When we sew up an incision in the presence of infection we should by all means make provision for drainage. Also, in case infection subsequently develops drainage must be established either by opening the incision or by making a stab wound to the side. I think a far better plan, is to leave the incision in such a condition that it will drain itself, either by approximating the edges loosely or by introducing drainage at the time of the operation. When we are dealing with infected tissues such as a gangrenous appendix, it is wise to drain the incision, whether we drain the abdomen or not. In severe infections drains should be placed between each two layers of the abdominal wall. By doing this we avoid extensive suppuration of the abdominal incision.

Dr. Royster's iodoform and vaseline injection is a splendid one. It is evidently patterned after Beck's paste and Rutherford Morrison's bip. Both are excellent applications for suppurating wounds. However, Moynihan says that they used bip in the English Army with excellent results, but gradually quit it and got just as good results.

Dr. Royster, closing the discussion: If Dr. Brenizer will remember, I said I claimed no superiority for the iodoform except its smell, which gave rise to Dr. Long's text from the Scriptures. If you drain through the wound, you will have a sinus which will stay there as long as you pack a piece of gauze into it, and that is just as long as you want to keep the patient in bed. I have not only developed parallel cases, but I have tried and watched other methods, such as opening the incision itself and using hot packs or irrigation and tapes. Usually it is three weeks before these wounds heal.

In regard to Dr. Bost's question, I will leave him a beautiful little conundrum: "When is a drain not a drain? When it is a stopper."

Dr. Burrus gives me a chance to say, "Whom the Lord loveth He chasteneth." He has seen the light. The most important attitude for a medi-

cal man is to feel miserable today unless he knows something he did not know yesterday.

Replying to Dr. Leigh's remarks, I have not used dichloramin-T, but Dakin's solution and other solutions, on these wounds before closing them up and then found that I had occasional suppuration outside the line of the wound. The wound was all right, but the organisms penetrated the tissues before we could get to them with the solution. His suggestion of using dichloramin-T is a very favorable one, however, and I think I have in mind what to do to save some of these wounds from suppurating.

When I said, "When in doubt, don't drain," I meant to imply that the experienced surgeon is never in doubt in the dangerous cases. You and I probably all of us, drain the same kind of cases. But we may differ about the cases we do not drain. Do you tell me that a man opens an abdomen and the appendix is not ruptured, but the whole abdomen is filled with a murky serum, that he is going to drain? If he does, it is because he is afraid of a fetish. You do it because someone said it in a textbook or in a clinic. Now if you have a great big gangrenous appendix wrapped up in the omentum, are you going to drain it? I have seen men drain these types of cases of which I have been speaking, and they kept the patients in bed a long time. Of course if the appendix is ruptured and there is pus all over the abdomen you will drain. My most devoted friend, the man I have patterned after most in North Carolina, and the man who is chiefly responsible for my having come back to the State, has expressed in an alliterative fashion what I have tried to tell you He speaks of my method as the "superficial salvage of suppurating smells" May I say this much—also alliteratively?—that smell is issuing from saprophytic sinuses considered by some to demand a cigarette; but sound surgical sense says otherwise. Dr. Long is eternally right about draining the incision; but I have presented a plan for saving the incision without draining it. The iodoform ointment accomplishes the same thing and leaves the incision intact. The method is not fashioned after "bipp," because I used it twenty years ago. I wish to emphasize that it is the plan and not the material which is important; it is economic surgery and not surgical fear which I am trying to impress upon you today.

GOITER.

Observations drawn from 150 operated cases and 71 unoperated cases.

ADDISON BRENIZER, M. D., CHARLOTTE, N. C.

I am employing the word goiter in a very loose sense, to embrace all enlargements of the thyroid gland. The word goiter, while counting a great deal, in reality denotes little. It denotes a more or less permanent enlargement or mass over the front of the neck to the lay mind and the same to many of the medical mind, with the exception that the enlargement has to do with the thyroid gland. The word goiter, however, is a very familiar word and from use, good or bad, is well accepted. Though as vague perhaps as rheumatism in its denotative sense, still it is of value in its connative sense, if the pathological conditions of the thyroid gland included under this term be understood.

A scheme of the pathological anatomy of the thyroid gland is necessary in

the diagnosis and treatment of goiter and I would formulate an outline such as the following.

A Disturbances in development: (1) Absence of the thyroid gland. (2) Accessory thyroids, from the base of the tongue (foramen cecum) to the sight of the normal gland, along the tract corresponding to a thyroglossal duct and beneath the sternum and upper chest.

B. Disturbances in metabolism: (1) Atrophies, after inflammations and reductions of blood supply on tying off vessels. (2) Degenerations: Parenchymatous, hyaline, amyloid, calcarious.

C. Disturbances in circulation: (1) local and general venous congestions may lead to enlargements of the thyroid. The transitory swellings during menstruation, initial sexual excitement and pregnancy are caused by a congestive hyperæmia, with increase of a watery colloid. Under this heading come the false goiters of adolescence and pregnancy. (2) A marked development of either arteries or veins may accompany any of the goiters and determine the nomenclature "vascular goiter."

D. Inflammations: (1) Simple thyroiditis, characterized by degeneration of epithelium and cellular excrudation, not infrequently accompanies the various infectious diseases. (2) Visible purulent infections are rare. These may spread directly from open wounds or contact with the larnyx or trachea or they may be hematogenous infection during, for example, typhoid or a pyemia. Abscesses may break outwardly or inwardly into the trachea. Diffuse inflammations may be followed by a destruction of glandular substances and fibrous atrophy. Goiters are far more prone to inflame and break down than the normal thyroid. (3) Tubercles are found in the thyroid accompaning disseminated miliary tuberculosis. Larger solitary or multiple tubercles are occasionally observed. (4) Gummata are found very seldom.

E. Regenerations: Thyroid tissue is slow to regenerate. Those developments of reses left after operations have likely a goitrous base. The tendency of these is to degenerate.

F. Hypertrophic enlargements: (1) These are the so called goiters proper, although the circumscribed forms offer no sharp differentiatior from tumor growths. These hypertrophies are (a) diffuse, where the enlargement involves the whole gland or the greater part of it, and (b) nodular, where the enlargement is issolated and encapsulated. According as the increase in volume is due to accumulation of colloid substance in the follicles of the gland or to an increase of the follicles themselves, we speak of: (a) a colloid goiter, and (b) a parenchymatos goiter. The former type is by far the more frequent. The goiter accompanying the symptoms complex, known as Graves' disease or exopthalmic goiter, is usually a diffuse goiter of the parenchymatos type, differing, however, from the parenchymatos goiter in that the process of change in the existing follicles is more active. The follicles show the lining cells changed from cuboidal to columnar forms and superimposed in several layers. The follicles empty of colloid, and the cells often form festoons into the empty spaces. These invaginations are followed up into the follicles by the surrounding connective tissue. The interstitial tissue is very vascular and permeated with leucocytes. The picture has

been compared to that of a lactating breast and it does show every sign of over active tissue. This process of change is described as hypertrophy and hyperplasia. These changes may take place only in certain parts of the gland and may spring up in old standing simple goiters giving rise to symptoms of thyro-toxicosis.

G. Tumors: (1) The commonest benign tumor of the thyroid gland is an adenoma. This tumor is responsible for many cases of nodular goiter and is sometimes accompanied by a thyro-toxicosis, showing many of the symptoms of Graves' disease; exophthalmos is usually absent. (2) There are a number of varities of malignant tumors of the thyroid, interesting to the pathologist, but impossible to differentiate clinically. The commonest malignant tumor is a carcinoma of the adenomatous type.

Cases in my series illustrating the above pathological scheme:

A. Thyro-glossal duct—(operated.)

B. Case of Vincent's angina, cervical adenitis, swelling and tenderness of the thyroid gland; rapid heart beat, marked exopthalmos; subsidence of the thyroid, recession of the eyeballs, marked ptosis—thyroiditis, hyperthyroidism, injury of the cervical sympathetic. 1.

(2) Old standing goiters of enormous size showing all forms of degeneration, even masses of calcarious deposit like bone. 37.

C. (1) Enlargement of the thyroid in young girls between thirteen and twenty years, increase in size during menstruation usually dysmenorrhoea; cystic ovaries in five years; same type of enlargement of glands during pregnancy. (55.)

(2) Enlargement of the thyroid in a woman forty years old; gland at times, especially during periods, twice the size ordinarily, tense, a distinct bruit heard over it—vascular goiter. 1.

D. (1) Accompanying flu, hard tender swelling of the right lobe of the thyroid gland, hoarseness; after several days swelling softer; right lobe exposed and incised, free pus—abscess of thyroid gland. 1.

(2) During subacute state of laryngitis and bronchitis, swelling of thyroid, becoming quite large, tender and fluctuating; advised exposure and incision, refused; abscess ruptured into trachea, patient coughed up deluge of pus, complete recovery—abscess of thyroid gland. 1.

Goiter with additional swelling, pain and tenderness; exposure of struma and incision, abundant pus—abscess of struma . 3.

Adenitis tuberculosa, mass corresponding with right lobe and isthmus of thyroid! thyroidectomy, conglomerate tubercles—tubercle of thyroid. 1.

A large lymph glands in the neck, mucous patches in the mouth, macular rash over the body, positive Wassermann; enlarged thyroid, pulse rate 120; anti-syphilitic treatment, with disappearance of thyroid enlargement and reduction of pulse—thyroiditis syphilitica. 1.

Enlarged thyroid, fast pulse, 128, exopthalmos; osteo-mylitis of tibia and cranial valut, positive Wassermann; anti-syphilitic treatment with disappearance of all symptoms—thyroiditis syphilitica, hyperthyroidism. 1.

E. Right lobe of thyroid removed for exopthalmic goiter, reappearance of struma of left lobe and isthmus, severe Graves' disease; isthmus and part of left lobe removed—further development on goitrous base. 1.

F. Diffuse goiter, parenchymatous and colloid. 14.

Nodular goiter, colloid. 39.

Diffuse nodular goiters, showing more or less marked symptoms of Graves' disease. 88.

G. Adenoma, incapsulated, symptoms of thyro-toxicosis. 3.

Carcinoma, adenomatous type. 2.

Without plunging hopelessly beyond my depths into the subjects of reciprocal glandular actions or humoral correlations and humoral interrelations, I shall offer merely several observations which point to the fact of an uncommonly intimate pathological correlation or interrelation of the several ductless glands and which are well adapted for the complication of clinical pictures.

Most of the ductless glands come into play with the thyroid; the pituritary, the parathyroids, the thymus, the adrenals, (including the medulary portion and the entire chromaffin system,) the pancreas and the gonads.

Thyroid gland: (1) Over-function and possibly dys-function causes Graves disease. (The thymus is now thought to play an important role in exophthalmic goiter.) (2) Underfunction or absence of function in adults produces myxedema; in infancy cretinism. (3) Total removal brings on cachexia strumapriva, resembling myxedema. (4) Thyroid extracts improve cretinism and relieve myxedema as long as it is given; it accentuates hyper-thyroidism.

Pituitary gland: (1) Over-function causes acromegaly. (2) Underfunction causes hypophysial dystrophy.

Parathyroid glandules: (1) Over-function is said to cause osteomalacia and eclampsia; proof wanting. (2) Under-function produces tetany in pregnancy. (3) Partial parathyroidectomy may be followed by tetany; total removal is followed by tetany and death. Parathyroid extract and transplantation of parathyroids is claimed to ameliorate tetany symptoms, at least temporarily.

Thymus gland: (1) Over-function may have to do with status thymicus and status thymo-lymphaticus. (2) Under-function; the gland normally involutes between the tenth and fifteenth years. (3) Thymectony has no influence on otherwise normal adults; it has a transient retardation of body growth in infancy; in some cases of exophthalmic goiter it has a checking influence on the progress of the disease. (4) Thymus extracts are questionable, probably accentuate an existing hyperthyroidism.

Adrenal glands: (1) Over-function causes hypertonia, hyperglycema, glycosuria. (2) Under-function causes Addison's disease.

The pancreas: Under-function or absence of function causes diabetes mellitus.

The gonads: (1) Over-function causes temporary excessive development of the organism, chlorosis in females. (2) Under-function and absence of function causes eunuchoidism.

The pineal gland: Under-function causes premature developments, especially of the genitalia.

Gley and others observed an enlargement of the pituitary glands after extirpation of the thyroid in young animals. The enlargement affects the glandular anterior lobe; vacuoles are found in the cells. Conversely after extirpation of a part of an adenoma of the pituitary in acromegaly an enlargement of the thyroid was observed. The hypophysis has been occasionally found enlarged in myxedema; in such cases the enlargement may depend on strumous degeneration. On the other hand, Benda states that the glandular hypophysis is small in Graves disease. The statements, however, as to the physiological correlation between the two ductless glands do not agree. But of greater clinical interest are the pathological correlations between the pituitary and the thyroid.

Thus, in endemic cretinism, not only the thyroid alone, but also the hyophysis is usually strumously degenerated. Josefson reports a case of hyperplasia of the hypohysis in congenital struma of the thyroid gland. Rosenhaupt reports a case of sarcoma of the anterior lobe of the hypophysis in which there was also a similar tumor of the thyroid gland. Falta has pointed out frequent manifestations of hyperthyrosis in acromegaly, especially in the later stages, with corresponding pathalogico-anatomical alterations in the thyroid gland. In multiple ductless glandular sclerosis the sclerotic process affects almost regularly the thyroid and the hypophysis. A slight degree of thyroid insufficiency does not seem to be rare in hypophysial dystrophy, at least a myxedemoid puffiness of the face may be observed, especially in the later stages. Finally there is evidence that the hypophysis may degenerate in the later stages of Graves' disease, because in such cases are found characteristic fat deposits and swellings of the skin that remind one of myxedema while the hyperthyrosis still continues and shows a great sensitiveness to thyroidine and adrenaline.

An important diagnostic test of exopthalmic goiter is the adrenaline test as carried out by Goetsch. This test is dependent upon whether or not adrenaline increases the blood pressure and pulse rate above ten points. It is a known fact that cases of exopthalmic goiter bear adrenaline poorly and there are many symptoms of exopthalmic goiter that point to an already increase of adrenaline in the blood.

The case of Bortz and Thurmin of a girl seventeen years old who first developed normally, the menses ceased and there developed a luxuriant deep black beard, and a sparse mustache, hairs developed on the chest and linea-alba. Death occurred as the result of an intercurrent illness. An autopsy revealed atrophy of the ovaries, enormous enlargement of the thyroid, normal hypophysis; on both sides there existed a super renal tumor rich in blood vessels that had apparently developed from the cortex (hypernephroma.)

R. Mueller in mentioning the secondary sexual characters in which an immediate dependence upon the sexual glands is shown, lists the skeleton, the muscular system, the skin appendages, such as combs, horns, beard, etc., gives the swelling of the thyroid gland a prominent place.

Well known is the swelling of the thyroid gland in the premenstrual period, the struma ante-menstrualis, as pointed out by Heidenhain. The suprarenal cortex and the hypophysis also increase in size before rut and the

premenstrual period. The mammary glands often swell slightly and may rarely, even in virgins, secrete colostrum. The nipples show an increased erectibility and are painful. All these changes occur as well during pregnancy.

It has been known since antiquity there has been an increase in volume of the thyroid gland during pregnancy.

Falta reported a case of castration in a man for tuberculosis, where among other symptoms a goiter developed which later receded.

Usually in castrates and eunuchoidism the thyroid gland is of less volume. Rapid improvements in eunuchoidism have been reported after treatment with thyroid extracts. Apert mentions a case complicated with cryptorchidism in which after one years' treatment with thyroid extract, the penis had distinctly grown, the testicles had lowered, and the weight had increased fifty pounds. Also Parhan and Mihailesko report a similar case in a fourteen year old youth with left sided inguinal cryptorchidism and obesity; under thyroid extract the genitals took on a rapid development.

Handmann found the thyroid gland enlarged twenty-four times in forty-four casaes of chlorosis, three times with distinct Graves' symptoms.

O. Marburg reported a case of a girl nine years old, who during eight months' time became obese, excessive especially on the breasts and abdomen. Autopsy showed a complex tumor of the pineal gland consisting of tissue of the pineal gland, the ependyma, the choroid plexus, and of glia, there was a colloid ctruma of the thyroid. In another case Neuman, occuring later in life, there was a persistent thymus and the formation of a goiter.

There are a number of suggestive points in the relation of the genital and sexual organs and the thyroid glands. In the king crab the thyroid opens directly into the uterus. The false goiters of adolescence and pregnancy are suggestive. Cases with so called goiters of adolescence usually menstruate late; I have found in eight cases out of fifty-five cystic ovaries; three of my cases of exopthalmic goiter had already been operated on for large ovarian cysts and one case operated on for exopthalmic goiter was later operated for an enormous cyst. Lampe, using the Abderhalden reaction, found in the sera of exopthalmic goiter patients, ferments against the ovaries, thyroid and thymus. This fact would point to some defect in ovarian secretion. I take it that the thyroid is stimulated to over-activity or reciprocally compensates an under-activity of the ovaries during the developmenal period and pregnancy.

These so-called goiters of adolescense amounting to nothing more pathologically than an enlargement of the gland, with increased watery colloid, represent a hypothyroidism while reciprocating the ovaries and usually disappear with maturity. Accompaning their disappearance there is usually relief of dysmenorrhoea and extreme general nervousness during the mentrual period.

In long standing cases of exopthalmic goiter there is occasional atrophy of the entire genitalia and of even the breasts. I have never seen a well developed, long standing case give birth to a child. Some one has said that a test of pure exopthalmic goiter is the fact that the woman could bear a child. (Halsted.)

So far as I have been able to ascertain, and this point is a difficult one to find out, I should say that the majority of early cases of exopthalmic goiter and the cases of goiters of adolescents were more hyper-sexual than hypo-sexual. Thomas says: "Nearly every married woman with whom I have discussed the matter has admitted some sort of incompatibility with her husband and since it almost always appears during the active sexual life, I strongly suspect a distinct relationship." On the other hand, I believe long-standing and out-spoken cases of expothalmic goiter to be hypo-sexual.

Briefly, the presence of a goiter is diagnosed by these simple signs: (1) An enlargement over the front of the neck, more often asymetrical than symetrical and of an extremely variable volume. (2) The covering skin is normal and does not ordinarily adhere to the growth. The superficial veins are usually considerably dilated. (3) The mass is movable in the depth, freely from side to side, but slightly from above downward. It moves up and down with the trachea on swallowing. (4) The consistence of the mass varies with its anatomical structure. Except in cancer, the surface is regularly smooth or smooth and thrown into bosses and the consistence soft elastic; cysts are fluctuating. (5) Respiratory troubles, such as dysponea, hoarseness, and aphonia, due to interference with the trachea and the recurrent laryngeal nerve. (6) Dysphagia, from compression of the esophagus. (7) Cyanosis, from pressure on veins. The internal jugular vein and caratoid artery are pushed outward and backward and are very rarely troubled.

Indications for operation: (1) Cosmetic. (2) Relief of pressure on trachea, esophagus, nerves and blood vessels. (3) Relief of hyperthyroidism and thyrotoxicosis, noted in twenty to twenty-five percent of simple goiters. (4) Prophylaxis for the preceding.

Dangers of thyroidectomy: (More on paper than in reality). (1) Anesthesia. (2) Hemorrhage. (3) Shock. (4) Infection. (5) Recurrent laryngeal nerve injury. (6) Injury to parathyroid glandules. (7) Air embolism. (8) Incision of trachea or collapse of trachea.

In fact that most of the large goiters are enucleated from the gland itself and the gland left behind protecting the deeper structures of the neck, and even in thyroidectomy the posterior capsule and a shaving of the gland are left behind, eliminates most of the dangers enumerated above.

Symptoms of Graves disease:

A. Major symptoms: (1) Tachycardia. (2) Exopthalmos. (3) Goiter.

B. Minor symptoms: (1) Tremor. (2) Muscular weakness. (3) Nervous excitability. (4) Mental depression. (5) Vertigo. (6) Eye signs, a dissociation between movements of the eye balls and upper lids (von Graefe); b—widening of lid slits (Dalrymple); c—protrusion of eye balls; d—insufficiency of convergence (Moebius); infrequency and incompleteness in winking (Stelwag). (7) Paroxysmal dyspnoea (Bryson), asthma. (8) Intermittent sweating, diarrhea or vomiting. (9) Gravity of the disease increased by mental and physical exhaustion; by thyroid extract and to a less extent by iodine (therapeutic test), by adrenaline (Goetsch's test). (10) Emaciation and anemia. (11) Leucopenia, with increased lymphocytosis. (12) Oedema of lids, later of feet. (13) Discoloration of skin, pigmentation, urticaria.

There is the closest analogy between the syndrome of Graves' disease and the effort syndrome. In France I was able to observe practically all transitions between a mild effort syndrome and well marked cases of Graves disease.

Indications for operation: (1) In all out-spoken cases of Graves' disease of at least one year's duration. (2) In all milder cases after the failure of medical treatment.

Surgical procedures: (1) Application of cold to the thyroid gland. (2) X-ray and radium exposures over the thyroid and enlarged thymus—danger of injury to the parathyroids and tetany. (3) Injections of boiling water into small areas of the gland (Porter). (4) Ligation of thyroid vessels (temporary and transient relief). (5) Thyroidectomy, partial, except in malignant disease. (6) Thymectomy in Graves' disease. (7) Transplantation of parathyroids (Halsted).

Series of cases:

Operated	150
Not operated	71

Operations

Enucleation of nodular goiters (colloid)	39
Enucleation of adenoma (thyro-toxicosis)	3
Exposure, incision, and drainage (abscess)	2
Excision of conglomerate tubercles	1
Ligation of superior thyroid vessels	2
Thyhoidectomy-partial (simple goiter, thyro-toxicosis	16
Thyroidectomy, lobe and isthmus (Graves disease)	83
Thyroidectomy, total (adeno-carcinoma)	2
	150

Clinical cases:

Cases too mild or too severe for surgery	16
Goiters of adolescence	52
Goiters of pregnancy	3
	71

Total cases	221
Deaths in first 28 cases	4
Deaths in 108 cases	0
Deaths in last 12 cases	2

The markedly reduced mortality has come about, not so much through an improved dexterity and speed in operating as in better judgment in selecting and preparing the cases for operation.

A case of exopthalmic goiter is not cured by operation alone and if not followed up and looked after and prohibited the resumption of former noxi, will cure with difficulty and may even relapse.

For a successful outcome with an exopthalmic goiter patient, it cannot be over-stressed that the patient be clearly understood before the operation,

carefully prepared under rest, with an ice bag on the throat and heart, and cold bathing done under the quietest and gentlest conditions. The time chosen for operation should be when the patient is at her best possible and not worst possible. It should be explained to the patient herself that the operation alone will not cure, but that she can expect great benefit, if not a cure, if after the operation she observe certain strict rules, principally rest, mental and physical, avoiding excitement of all kinds, and the adoption of a very simple life, free from cares and burdens.

Two of my four deaths were from exhaustion due to prolonged operation with hemorrhage and shock. I feel that I should be able to save these two cases at present. The other two deaths were due to an increased hyperthyroidism and consequent thyrotoxicosis, and were likely unavoidable, certainly at that time. During five hours' time, following the operation on one case, the pulse rate increased to beyond a possible count, the temperature rose to 107 degrees and the patient died under what was no far different from the symptoms of an acidosis.

Crile recently claims that there is ten per cent increase of metrabolism for each degree of temperature, and conversely, ten per cent decrease in metabolism for each degree of reduction of temperature. He says, therefore, that he has reduced the metabolism from toxicosis by reducing the temperature by ice packs, ice on a rubber sheet fanned by an electric fan. I, however, doubt that temperature alone can be used as a guide of metabolism, and certainly not of metabolism in hyperthyroidism and thyrotoxicosis, because, the most marked cases of hyperthyroidism frequently show little or no hyperthermia. These deaths may be due to exhaustion of the vasomotor center through the thyrotoxicosis, with a concomitant effect on the heat center.

These deaths may be due likewise, in part at least, to a lymphatism. It is known that occasion is given for temporary or a permanent lymphatism by affections of the ductless glands. The characteristic blood picture of both status lymphaticus and hyperthyroidism is a relative increase of the mononuclear elements, a relative or absolute reduction of the neutrophilic leucocytes and eventually a hypereosinophilia.

According to Wiesel and Hedinger there is regularly associated with the characteristic symptoms of status lymphaticus a lessened development of the chromaffine tissue. The medullary substance of the suprarenals is essentially lessened and also the paraganglia are ill developed.

It is possible that the giving off of the mononuclear cells of the blood is increased by hyperplasia of the lymphatic apparatus, and, on the other hand, we must assume an enormous trophic influence is exerted on the production of the neuthophilic elements of the bone marrow, this influence proceding from the chromaffine tissue by mediation of the sympathetic. It is very possible that a like anomaly of constitution is the cause of sudden death in hyperthyroidism as well as in status lymphaticus. Thus, if the chromaffine tissue is lessened and not capable of a great functional breadth, it may, if especial demands are made on it, as by the effects of a narcosis or operation, suddenly give out. Such individuals either with status lymphaticus or hyperthyroidism, as Eppinger and Hess mention, not rarely show symptoms of relatively increased vagal tonus, such as inclinations to sweats and anomalies of pulse and respiration. The slight functional breadth of the chromaffine

tissues is especially important for the fate of such individuals. On the other hand, it must be kept in mind that mononucleosis is a symptom with many meanings and in itself speaks little for the diagnosis of status lymphaticus and much less for the diagnosis of hyperthyroidism.

It is certainly true that in the preparation for operation of cases of hyperthyroidism that the application of cold locally and cold bathing have a very appreciable effect in quieting the patient and reducing the pulse rate. It is to be hoped that Crile's idea is correct and that Crile's ice packs may aid in warding off death in these occasional cases of markedly increased hyperthyroidism and thyrotoxicosis following operation. For if these cases can be protected in this way, thyroid surgery, so far as loss of life is concerned, is made as safe as the common run of operations.

DISCUSSION OF DR. BERNIZER'S PAPER

DR. J. B. CRANMER, WILMINGTON: I should like to ask Dr. Brenizer what he thinks of the medical treatment of goiter, the Forchheimer treatment,—quinine and ergotol, and in what kind of cases this may be used?

DR. BERNIZER: In preparing cases for operation they go through almost the Forchheimer treatment. They are given five grains of quinine three times a day; and an ice bag is placed on the throat. They may get better, but they do not hold the betterment. These cases are chronic. A few cases respond to medical treatment, but I doubt if there is any real medical treatment outside of rest or an icebag on the throat. I do not believe the thyroid gland is the whole story, but only a part of the chain which has to be broken by the removal of the thyroid gland. Remember, when you are treating cases by the medical method your mortality is about sixteen per cent, while the surgical mortality is about three per cent. Therefore, by subjecting these cases to surgery you might save thirteen per cent. While the cures are likely not over seventy per cent, the cures in medicine are not over thirty per cent. I am speaking now of Graves' disease. Mild cases might respond to the rest cure, but it is mighty hard to subject the patient to sufficient rest cure to do much good.

DR. CRANMER: Personally, I am of the opinion that this is a surgical disease, but I wished to have Dr. Brenizer's opinion in the matter.

INGUINAL HERNIA.

DR. J. T. BURRUS, HIGH POINT

The inguinal region is one of interest to the surgeon because of the frequency of hernia and the necessity for its radical cure. The writer wishes to report two hundred operations for the radical cure of inguinal hernia.

The anatomy with which we are most concerned lies within the Hesselback triangle, which is bounded internally by the rectus abdominus muscles, externally by the deep epigastric artery and inferiorly by puparts ligament.

The ilio-inguinal nerve lies directly under the fascia of the external oblique. Care must be exercised that this nerve is not divided or traumertized. This nerve has much to do with vitalizing the tissue with which we are concerned. The test of any operation for hernia is that the parts will be securely held and that the opening will be permanently closed in a way that no other tissue will be destroyed and that the patient will be able to comfortably discharge his duties unhampered.

In umbilical and incisional hernia, openings that can be totally obliterated all are doing an imbrication operation, thus building a firm and secure wall, and in many cases a wall more secure than nature constructed in the first place.

In operating inguinal hernia the question of the spermatic cord has been uppermost in the minds of the surgeons. Many have written often and at length on transplanting the cord; another list has condemned this, adhering to Macewin's idea—not to transplant the cord, but to place it in the notch as securely as possible, obliterating the canal with the conjoined tendon and puparts ligament anterior to the cord and plugging the opening in the internal ring with the sack.

Again, a good deal has been said about the amount of pressure that could be placed on or around the cord without injury to the testicle, a goodly number doing the Bessini operation, bringing the tissue about the cord as closely as possible. Others doing the same operation seem to have no concern as to how loosely the cord lies in its new canal.

In the summer of 1917 the writer was assigned chief of surgical service in a United States Army Base Hospital. In the early fall of this year an opportunity was presented to observe a large number of men who, as you know, went into service with hernia. In the early fall these men became unfit for duty owing to the combat drills and other tests of physical fitness. A real opportunity to try out the different operations for the cure of this condition presented itself.

The first ten cases were operated according to Bessini operation; eight cases were operated according to Macewin method; eleven cases after the Furgerson method. These cases were kept in bed twenty-one days, then allowed to walk some each day in the wards, gradually increasing their exercise and retained in the hospital six weeks. At the end of this time they were returned to duty. The day following their arrival with their organization, full duty was assigned them and the test given was the ability to withstand as much as the man that had been hard at it every day.

Two (2) Bessini cases returned, two (2) Macewin cases returned, one (1) Furgerson case returned to hospital with a recurrence of hernia. This (a very large percentage of recurrences) was not satisfactory to the chief of the service. The idea was to build a wall as securely as possible, through which the cord could emerge without injury to the testicle and at the same time hold. The writer began the following method, and, so far as I know, no recurrences were reported.

At first the tissues were not sutured as closely about the cord as later, the cases being later observed closely to see that the testicle was not injured.

Operation: (Fig. 1) Incision 3½ to 4 inches long parallel with and two inches above puparts ligament, skin superficial and deep fascia divided. The fascia was dissected from external oblique, exposing a very broad field, 3½ to 5 inch incision through external oblique at the dividing fibres. Here it is necessary to lift up the fascia exposing the ilio inguinal nerve, care being taken not to injure the nerve. Fibres of external oblique divided the length of skin incision. The outer layers of external oblique picked up with hemastats and sharp dissection to bottom of puparts ligament. Two hemastats placed on internal fibres of the divided external oblique. By sharp dissec-

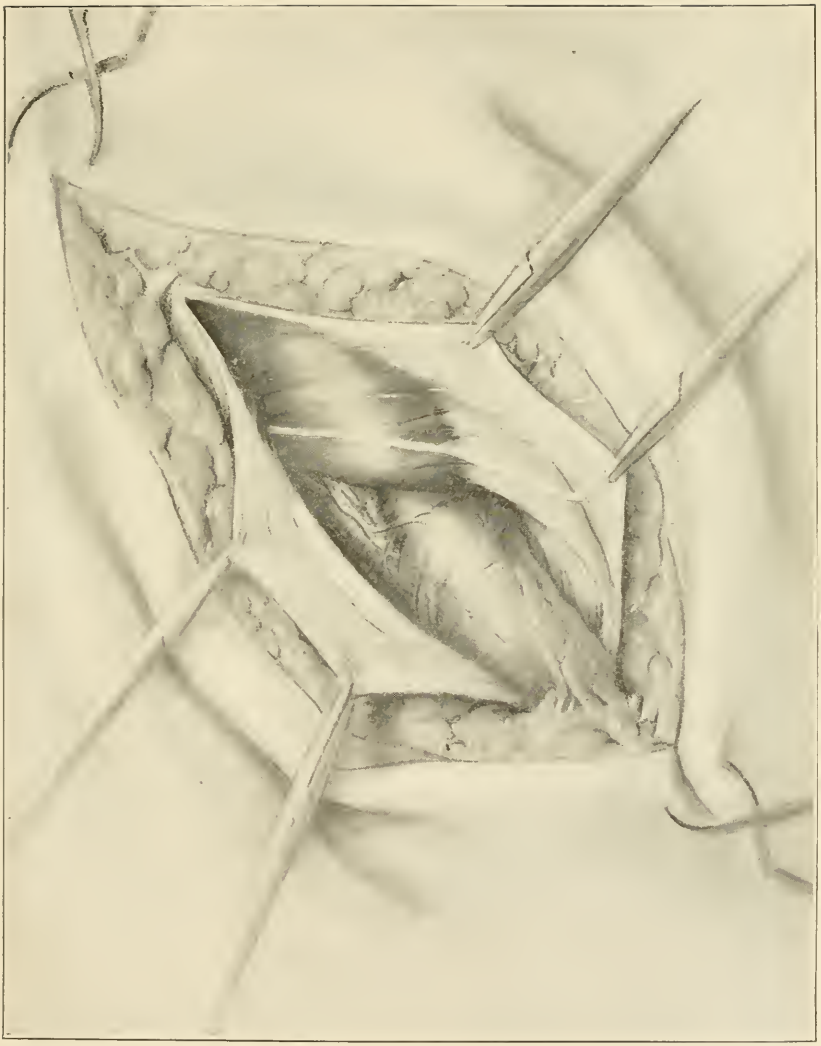
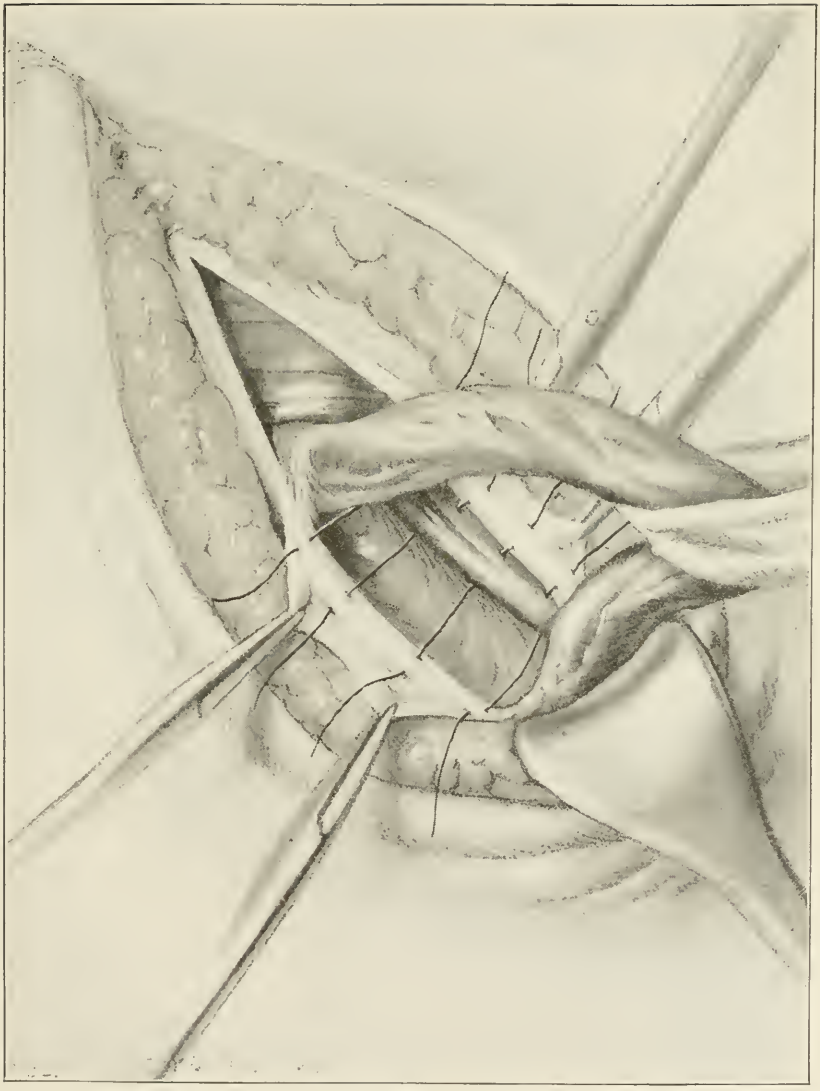


Fig. 1

Fig. 2

Fig. 3



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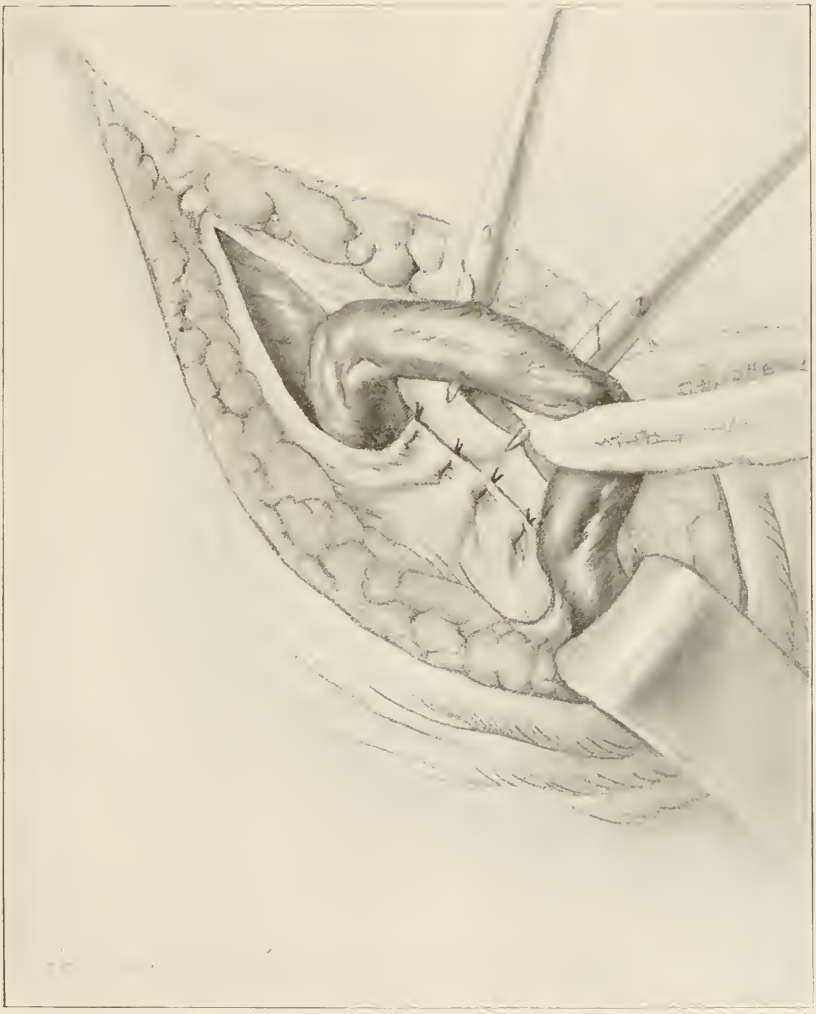
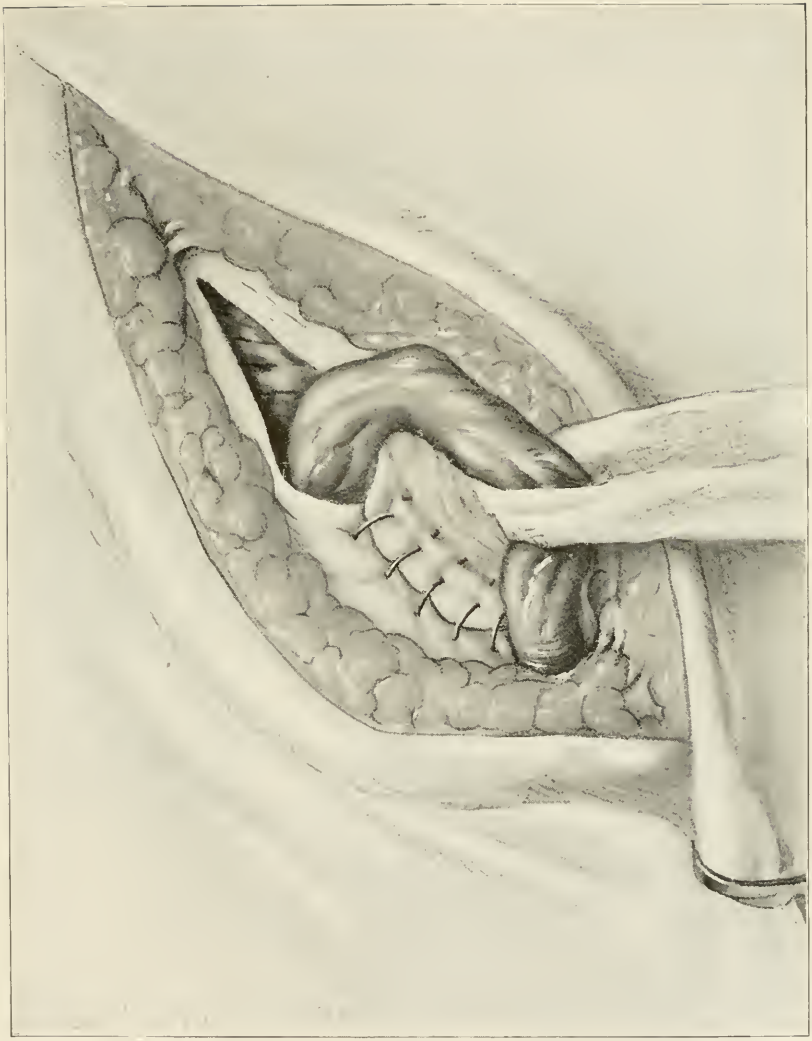


FIG. 5



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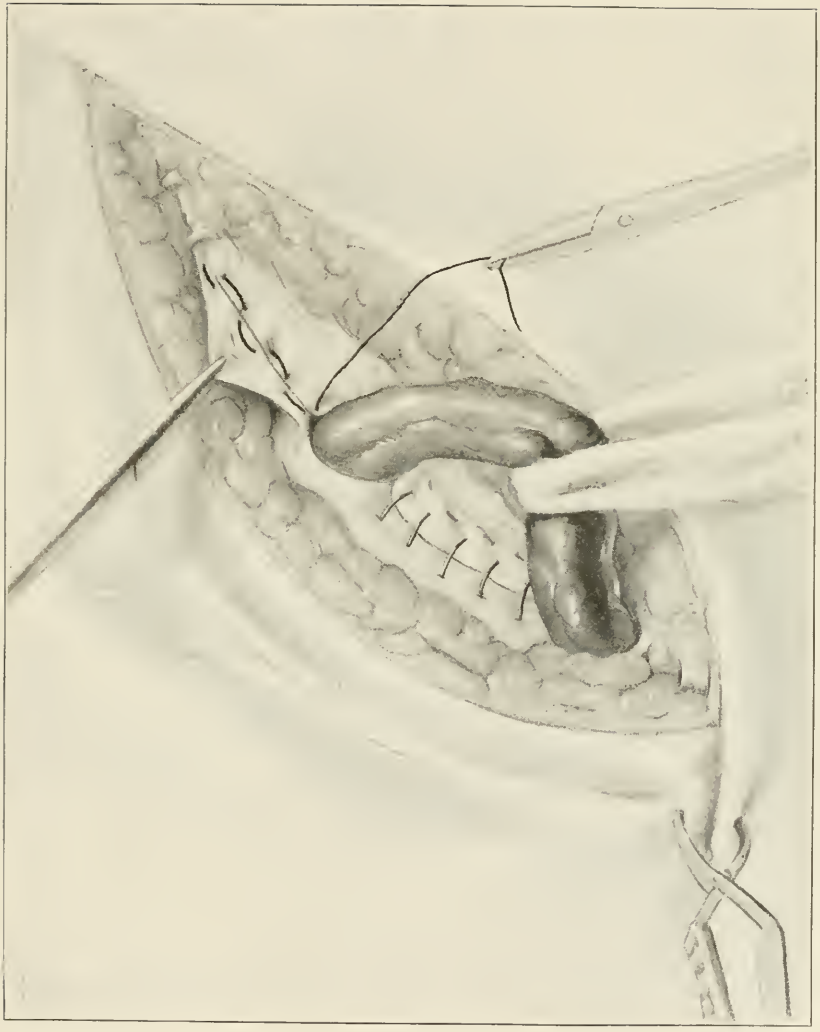

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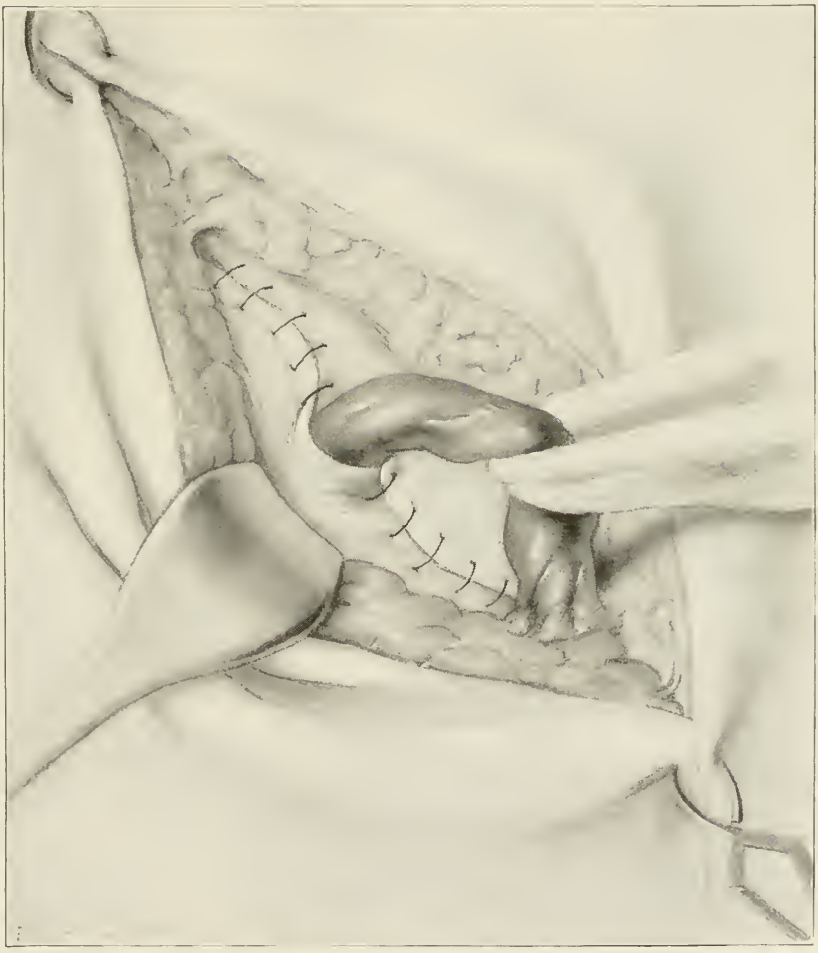


Fig. 8

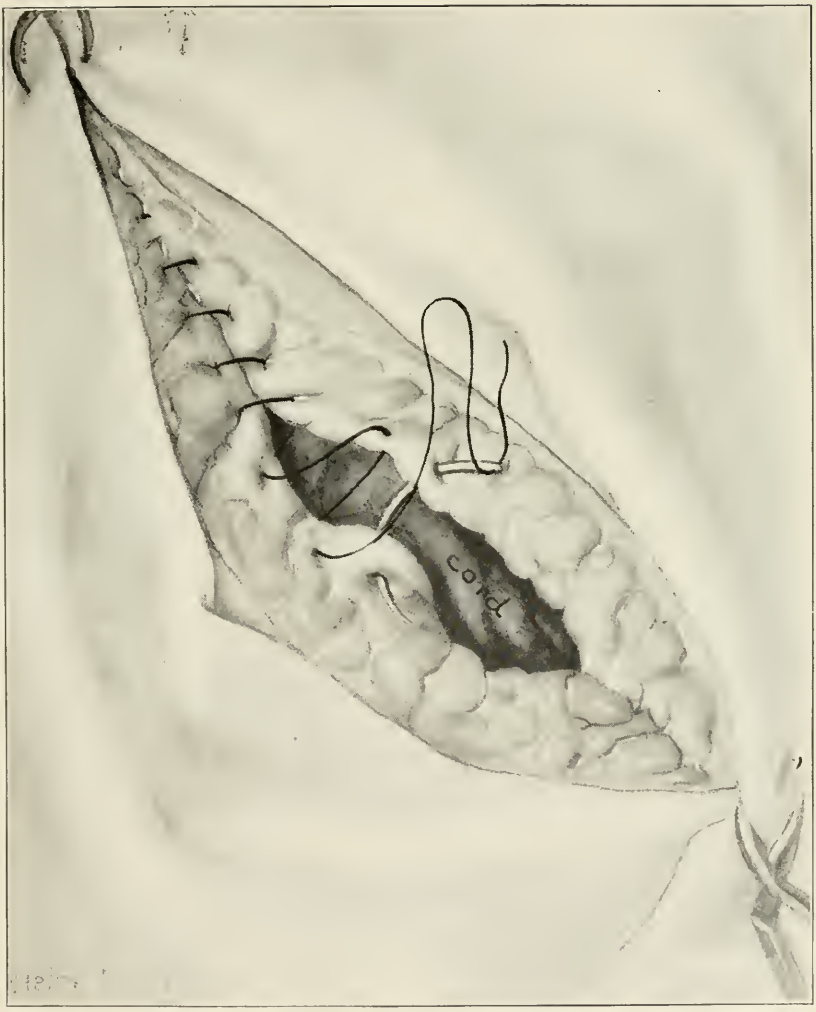


Fig. 9

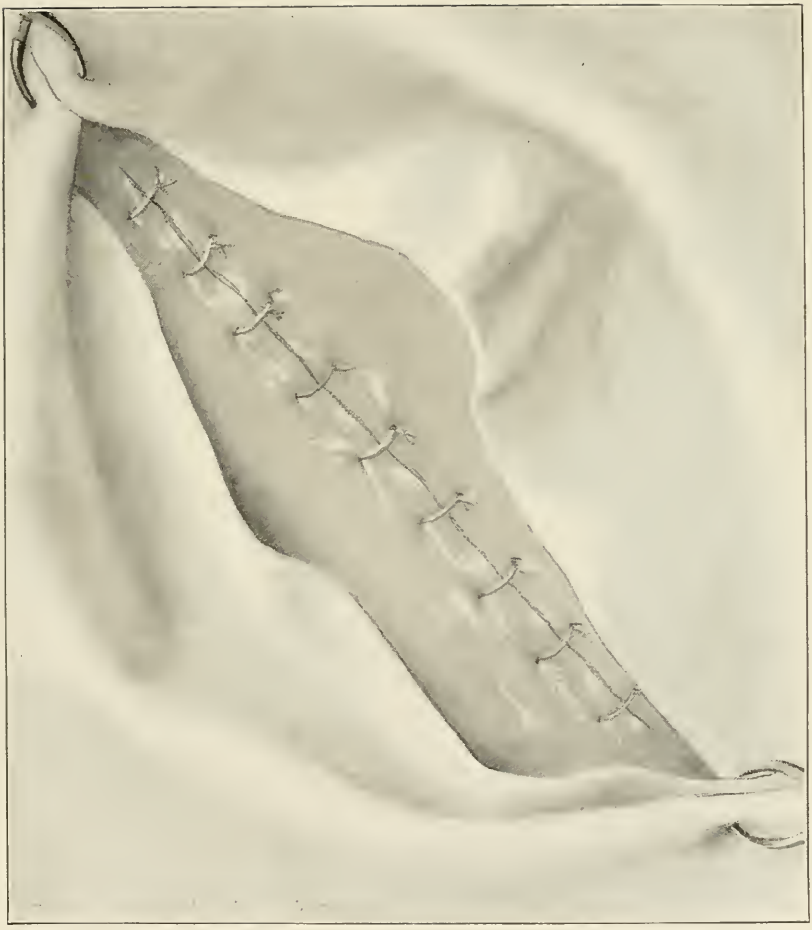
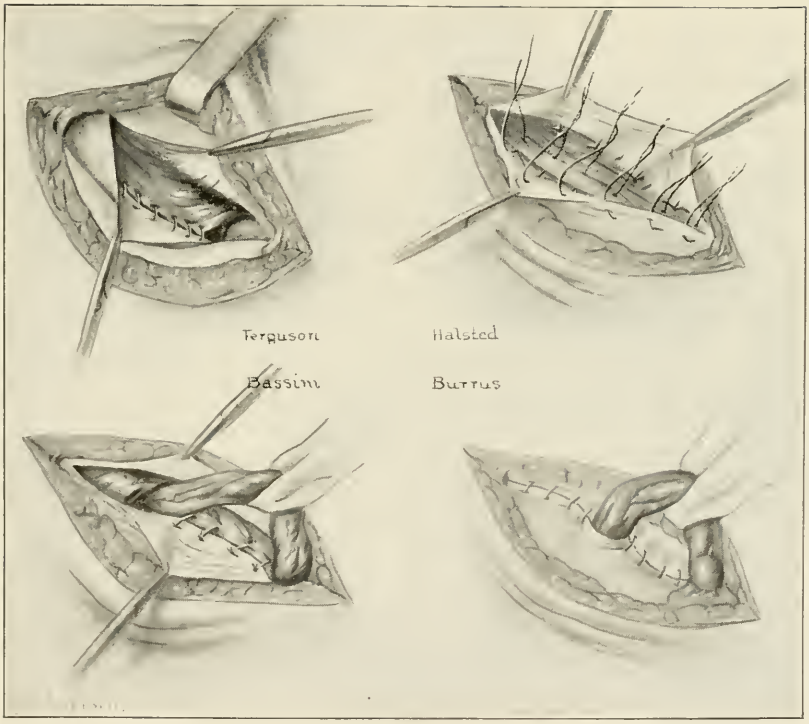


Fig. 10


Ferguson
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tion this flap was carried free internal to the conjoined tendon. This exposes the canal in its entire length with the cord and its coverings. (Fig. 2) The cord lifted from canal by blunt dissection is freed. A tape is passed under cord for the purpose of easily lifting the cord to either side. The coverings of cord are divided, sack located and lifted free from vas and cord dissecting it free to internal ring. (Fig. 3) The sack opened and a through and through suture passed through sack, which is ligated as high up as possible. The sack is now cut, which allows the stump to recede in the abdominal cavity. (Fig. 4) The cord held external until the lower sutures are placed. (Sutures used Chromic Gut No. 3). The internal flap or the divided external oblique is lifted up, exposing the conjoined tendon. From the under surface of the sheath the suture is carried around a goodly bundle of this fascia, the conjoined tendon thence to the bottom of puparts ligament, grasping the ligament which is now pleated on itself. (Fig. 5) The sutures are placed in this way until the internal ring is reached, usually requiring four of five sutures. These sutures are now tied, which brings the cord from the internal ring at right angles. (Fig. 6) The internal flap is now brought external to the first row of sutures and sutured to puparts externally and the fascia lata thus overlapping the first line of sutures. This builds a pillow under the cord and obliterates the canal above the internal ring or the cord. (Fig. 7) The internal layers of the external oblique are placed under the external flap and sutured with interrupted cat-gut sutures. (Fig. 8) The external flap is now placed over this line of sutures and securely sutured over the internal flap. These sutures are placed very close to the cord. (Fig. 9) The deep fascia closed over the cord, which has been transplanted directly under deep superficial fascia and skin. (Fig. 10) Skin incision closed with silk-worm gut sutures.

I now present the lantern slides that will show you the steps in the operation.

1. Skin incision.
2. Incision and dissection of facia of external oblique.
3. Separation of sack.
4. Position of first line of sutures below cord.
5. Position of sutures of overlapping flap.
6. Position of sutures in flaps above cord.
7. Conjoined suturing of flaps and position of cord.
8. Sutures line over cord.
9. Operation completed.

SOME PROBLEMS MET WITH IN GALL-BLADDER SURGERY.

Dr. J. W. Tankersley, Wilmington, N. C.

In reviewing 15 years' experience with gall-bladder operations and following their ultimate outcome I have been struck by the number of complications and difficulties so frequently encountered. Mayo in 4,000 operations on the gall-bladder says he has encountered complications in two-thirds of his cases. This has led to a closer anatomical study of the gall-bladder and it is quite frequent that variations from the normal are noted. In the first place the gall-bladder is described as a pear-shaped organ lying in the fossa vesicalis. This is partly true of normal gall-bladders but in practically every

pathological gall-bladder there is quite a depression, amounting in most cases to a distinct pouch, at the under surface of the bladder just before it terminates in the cystic duct. This is a frequent source or receptacle for a large embedded stone and frequently presents an added difficulty in freeing and clamping the cystic duct in cholesystectomy. Again anomolies in development and formation of the cystic, hepatic and common ducts are frequently found. The hepatics may join much lower down than normal, I have found in one case the cystic entering into the right hepatic, the right and left hepatic joining just below the entrance of the cystic. Again the cystic may be long and pass over the hepatic or around it before joining to form the common. You can readily see the importance of understanding the possible conditions to be met with in ligating the cystic duct as a mistake in ligating here cannot be easily rectified.

In an enlarged empyemic gall-bladder with adhesions to the pylorus duodenum and transverse colon the typical splitting of peritoneum, grasping of duct and artery separately, is attended with much care and difficulty. In addition if we should have duct obstruction with its comcomitant jaundice the difficulties are at once magnified by the slow but aggravating oozing of blood due to the delayed coagulation time and possibly heamic changes. To correct or lessen this oozing I have been in the habit of injecting blood serum intravenously preliminary to operation in all cases of jaundice. Another possible source of hemorrhage is from slipping of a ligature on the cystic duct or injury to the portal vein. On three occasions, I have seen distressing hemorrhage, twice from injury to the portal circulation, and once from ligature slipping on the cystic artery. Of course, we would only look for this in those cases of extensive inflammatory conditions, where dissection is difficult. These difficulties have to be avoided by double tying and more careful freeing of the duct and artery before ligating. In my mind the next most frequent difficulty is in removing stones from the ducts. I believe there is a frequent recurrence of trouble post-operative due to a failure to properly palpate and remove stones. We are told to pass a probe through the gall-bladder or divided end of the cystic duct and so on down the duodenum. Personally this has never been an easy matter to me and I have frequently noticed others stop after a vain attempt and remark that there were no stones in it anyway. To successfully palpate and detect small stones is not so easy when we consider the number of hardened, inflamed glands at the junction and along the duct that might be mistaken for stones and the infiltrated condition of the ducts themselves. Occasionally we find the duct obstructed with a stone too large to work back but there are extremely few cases where I have had to open the duct to relieve the obstruction. If stones large enough to go through the duct and obstruct the intestines surely we should be able to get them out without cutting the duct. Such cases have been reported. I believe most cases of stone obstruction occurs at the junction of the cystic and hepatic or in the diverticulum of Vater. Where the obstruction occurs high up it is the exception that you cannot milk it back into the divided ends or opened gall-bladder, or if it occurs in the lower end open through the duodenum and deliver the stone by divulsion of the orifice, closing the duodenum afterwards. This gives a good drainage as nature intended it, via naturalis. This method was suggested to me by my friend and teacher, Dr. J. W. Long, several years ago and I have found it very

satisfactory. Critics may argue here that there is more opportunity of injuring the pancreatic duct or allowing bile and infected material to enter the duct. Personally I have never had this trouble and will leave that discussion to any that have had more experience with this method than I. The problem of pancreatitis complicating gall-bladder disease, I believe is too frequently overlooked but that is in the nature of a complication. However, I wish to add that the only two deaths I have encountered in the last four years in gall-bladder surgery were due to this complication. Next to difficulty in removing stones is injury to the ducts. Of course, this would occur only after removal of the bladder. It is very easy to say deliver the gall-bladder into the wound by traction, separate the peritoneum, grasp the duct with forceps, but in those large inflammatory conditions this is easier said than done and with much experience in gall-bladder surgery any of us will acknowledge how easy it is in this condition to grasp, cut or stitch the hepatic or common duct during this operation. I know of no more tedious or unsatisfactory operation than repairing an injured or severed common duct weeks or months afterward. Should this cut be recognized at once it may be properly repaired over a small rubber tube or if not completely severed rubber tube inserted and allowed to close spontaneously. This difficulty is well illustrated in the following case:

Mrs. C. H. S., married, several children, had suffered for years with symptoms indicating gall-bladder trouble and was operated on several months previously. Entered the hospital in April, 1919, intensely jaundiced. Had been jaundiced about two months, gradually growing more intense. Blood examination negative, urine almost black with bile. Patient still able to be up and about the house but slowly going down hill. We thought possible obstruction was due to large stone, operation was certainly indicated. April 3rd, she was removed to operating room and under general anesthesia following condition was found:

Extensive inflammatory condition, adhesions, to abdominal wall, stomach, duodenum and transverse colon. Gall-bladder had been removed. Adhesions were dense in gall-bladder fossa. After freeing them duct was found to be completely obliterated by contracted inflammatory tissue except about one inch entering the duodenum. After freeing duct it was found so friable that even with delicate handling it promptly broke up under forceps. After vainly trying to obtain sufficient duct to insert tube and make an artificial tube it was found impracticable and I decided to anastamose duct to duodenum. In this case unfortunately the hepatics joined low down and I had to do the anastamosis at the junction of the two hepatics. This was finally accomplished with difficulty. Five days after she had a profuse hemorrhage from somewhere inside the wound which was stopped by packing and from that on she made an uninterrupted recovery. Jaundice promptly cleared up and at the last report she was doing well.

In regard to injury of the liver this will occur only from carelessness and usually where you have used metal retractors. The liver should be pulled forward only by the hands of an assistant. Personally I have never seen a primary cancer of the gall-bladder, only those from metastasis and here I believe the patient should be best let alone. On two occasions I have seen rupture of the gall-bladder several months after drainage with severe peri-

tonitis. In both cases the patients were saved by free drainage of the abdomen and removal of the gall-bladder. In both cases the patients were advised to have gall-bladder removed at a later operation but they took matters into their own hands.

TREATMENT OF INFECTED BONE CAVATIES

Drs. D. W. & Ernest S. Bulluck and R. H. Davis
Wilmington, N. C.

Infected bone cavaties are healed with great difficulty. The tendency is toward chronicity. The process of repair seems limited and the result is often disappointing. Regardless of the cause the essential condition is the same—a chronic fistula of the bone with associated infection.

The pathology is that of osteomyelitis. The abcess may be simple or there may be an involucrum and sequestrum. Such cavaties are covered with granulations and discharge by sinuses for long periods. Sargent (1) reports such a case of sixteen years duration, and those existing for several years are familiar to all.

The formation of new bone is not necessary for recovery, and it is difficult to understand why bone, a connective tissue, does not replace breeches in its continuity with the same promptness that union follows fracture. It is suggested by White (2) that incomplete restitution results from lessened vascularity, due to the duration of the reparative process, osteosclerotic changes progressively denser, thicker and less vascular, limiting proliferation. Such conditions as a rule are not found and there is little osteosclerosis. Sargent believes that the fibrous tissue has reached full maturity before the cavity is obliterated. As this tissue shows elsewhere great capacity for reproduction, and as the lesion ultimately heals when the fibrous tissue is even more mature, this view does not seem tenable. The proposition of Martin (3) that this inactivity of the connective tissue, "may result from environmental conditions, such as the desiccation and irritation of the granulations by air, contact with dressings, solutions, surface bacteria and dirt," seem insufficient. The same conditions surround the breeches in all tissue, yet they heal more promptly. A more plausible explanation of this tardy healing seems to follow a consideration of the tissue in question. While the bone marrow does have its origin in the embryonic mesoblast, in common with other fibrous tissues; it's confinement in the bone cavity, and it's special function there, are not without effect on its primary characteristics. Thus, it becomes more cellular than fibrous, more mitotic, but the newly formed cells are discharged into the blood stream—having made no fibers. Differences in moisture, consistency, color and in bacterial resistance serve further to show that qualities common to areolar tissue are not necessarily to be expected in bone marrow. The marrow only incompletely fills the meduallary space. A cavity partly filled has reached the normal limit of its compactness. Further healing is dependent upon sterilization from within and closure from without. This closure takes place in a manner not generally recognized. The granulations covering the cavity do not increase in thickness until the mouth of the cavity is reached, then protude from the opening, become mushroomed above it, until by piling on at the edges it becomes blended with the surrounding tissues. The healing it seems to us

depends upon relative sterility of the cavity, and the closure of the opening is accomplished by adherence of overlying fibrous tissues, generally the perimysium of adjacent muscles or their tendon sheaths. The sealing takes place at the edges of the cavity where the covering is attached by plastic adhesions to the vascular layer of the periosteum. At first the attachment is incomplete and is only completed after such organisms as remain in the cavity become latent. This fibrous door thickens by growing into the cavity until the level of the endosteum is reached, where it blends with the vascular layer of that membrane. Thus, a fibrous plug is made, that fits into the mouth of the cavity, and to which later the bone marrow is lightly attached. The fibrous plug may retain its character for years but is finally ossified.

Assuming that the mechanism of recovery is as here stated, we can readily understand why these cavities opening at the inner side of the tibia are the most difficult in which to effect a cure. We have to deal with a perforation in the cortex that the bone itself cannot obliterate. To clean such a cavity and pack it with gauze for drainage, hæmostasis, and to insure the skin remaining open until the cavity has closed by granulation from the bottom of this newly made wound, seems to be a misdirected effort, for in so doing the overlying tissues that would have served to bridge the mouth of the cavity are pushed aside and so held until they become fixed in the new position. The bone is incapable of producing the necessary granulation tissue and of nourishing it while the gap is being repaired. The result is that recovery is difficult, delayed and sometimes impossible. The exposed and denuded bone undergoes destructive changes that further complicates the process of healing. If the old method is reversed and the overlying tissues so closed as to favor their approximation to the borders of the cavity, the result will be much better. The bone is well covered and bathed in the customary fluids. Drainage and irrigation through a single small tube is sufficient.

We have to treat an infection of the bone and a hole in its cortex, to clean the cavity and to close it. The infected surface should have its lining removed in the most careful and systematic manner, until every focus of osteitis and all necrotic tissue has been removed and the cavity converted into an open gutter. Mechanical perfection is necessary to success; a tiny morsel of tissue foreign body, or area of osteitis, may defeat the whole effort. Scrapings after a cavity has been most carefully treated will reveal organisms. Experience with bone grafts has shown that such organisms may remain dormant for long periods and then regain their virulence, and that a cavity may heal despite the presence of a very attenuated infection. Antiseptics are not without value. The one per cent solution of Formalin used by Ashurst (4) seems too weak, its action transitory and superficial. Phenol is efficacious but it leaves the cavity lined with a layer of devitilized tissue. Mosetig-Moorhof used the hot air blast, but question has arisen as to the sterility of such air and whether at 100 degrees Centigrade this air may not be injurious to the bone. To test this method Delbet curetted cavities so treated and made cultures from the particles removed. The cultures were always positive. If he used Tincture of Iodine instead of hot air the cultures were negative. For this and obvious reasons Iodine is the antiseptic of choice and should be freely applied, after the cavity has been me-

chanically cleaned. This work should be done under Esmarch's anæmia. If impossible to do this hemorrhage may be controlled by the usual means. In some instances—Brodies abscess and hæmætogenous osteomyelitis,—this cleaning, with collapse of the soft parts is sufficient to effect a cure. (5). The cavities infected with the pyogenic cocci show less tendency to heal.

Plugging the cavity with such pastes as have been advocated by Beck, Neuber, Mosetig-Moorhof, or the Bipp (6) recently used by the English has not been very successful, the good results accorded each particular preparation being the reports of its originator. The cavities cannot be sterilized and the paste becomes infected and is discharged. The experiments of Silbermark (7) seem to rationalize these preparations, but he injected sterile cavities in normal bone which is hardly a parallel condition. With each however the soft parts are to be closed over the paste and thus a natural approximation of the parts is accomplished, which is certainly better than propping the wound open.

The disadvantage of a "foreign body" was obviated by Schede's method of allowing the defect to fill with blood. This is practical in sterile cavities (Bancroft 8), but bone fistulæ are infected. Dorst has shown that the susceptibility is increased 40 fold for the Staphyloccus if a hæmatoma is present. Skin sutured over a collection of blood will not heal satisfactorily, even if there is no infection. A bone cavity filled with "something" is not necessary for recovery. It need only be sterile and covered by fibrous tissue. In this connection attention is called to a recent report by Albee (9) in which he claims "that an efficient and trustworthy stimulus to osteogenesis has been found in Triple Calcium Phosphate." A single injection of one c.c. of a five per cent solution being sufficient to reduce the duration of treatment twenty-six per cent in experimental fracture. Such an agent might be applicable to bone cavities and by its action so stimulate the bone that the bony tissue would share more activity in the reparative process.

The most rational method it seems to us, is to carefully clean the cavity in the manner indicated, replace the soft parts in such a manner that they will rest in gentle contact with the effected surface of the bone. The wound is closed except for a small tube that leads to the cavity. The cavity is irrigated with Daken's solution using the Carrell technique for bacterial control. After about two weeks the discharges are practically sterile and the tube is slowly withdrawn over a period lasting about two weeks. If the soft tissues could not be approximated to the bone at the first operation, a secondary one is done after the wound has been sterilized. At this time the types of tissue are approximated and held by suture. The gist of the treatment rests in the cleaning of the cavity, the control of infection with Dakin's solution and the approximation of the adjacent fibrous tissue to the mouth of the cavity.

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CLOSURE OF BELLY WALL BASED ON THE HEALING POWER OF TISSUE.

Henry F. Long, M. D., F. A. C. S., Statesville, N. C.

"In making an incision in the abdominal wall the anatomical layers composing this wall should be considered, for if they are not the closing of the cavity after the intra-abdominal operation has been completed may not be satisfactory and may result in a weakened point in the wall which may presently develop into a hernia, and this may be many times more serious an affliction to the patient than the condition for which the operation was undertaken." This is a truth and an admonition coming from that great surgical philosopher, A. J. Oschner, and this is the first key that unlocks the difficulty to a successful belly closure. We must not stop here, however, but after reaching the first point, which is a thorough and complete knowledge of the anatomy of the belly-wall, we must take up each layer separately and individually and study how it heals and above everything else how long it takes each layer to form a safe and complete union, in other words the healing time of each tissue involved. Before we study the various layers concerned in an abdominal incision I want to lay down this dictum—that we believe that only connective tissue heals to any degree of stability quickly, and that the readiness and firmness with which any particular layer heals depends entirely on the available connective tissue present, and I think that I will be able to show you that this is correct from a biological, histological, pathological and clinical standpoint. It is a general biologic law that the lower the organism the greater are its regenerative powers and the stronger its hold on life, for example, the ameba consisting of only one cell simply splits and we have two, the ordinary earth worm cut in twain goes on living as if nothing had happened, some of the lower organisms can even be turned wrong side out and live right on, reptiles continue to grow till death while man and the higher animals cease to grow at a certain age and so on ad infinitum, the lower the organism in the scale of life the greater the regenerative and reproductive power and the greater its ability to live and carry on these functions under unfavorable conditions. This same principle applies to tissues as well as to organisms, that is the more embryonic and simple a tissue the greater its power to regenerate and live, the less vulnerable it is and the quicker it overcomes insults. I would say that the two extremes of tissue are represented by connective tissue as the lowest developed and least specialized, and nervous and muscular tissue as the highest type. Connective tissue is essentially a supportive tissue and has no specialized

function. Muscular and nervous tissue are highly specialized and differentiated and have special function to perform, these characteristics are developed at the expense of their regenerative power. Connective tissue will grow in a test tube entirely separated from the rest of the organism. Carrell has carried a piece continuously over a period of twenty-eight months and the cells were shown under the microscope to have actively multiplied for two years. This shows conclusively that connective tissue has regenerative and reproductive powers far ahead of the others and that it will grow and its cells multiply under conditions adverse to cell life. Please keep this in mind, as the method of closure I shall describe is based on this fact and clinical experience.

We will take as an example the incision in the lower midline. Here we encounter from without inward, first the skin, then the fascia and going through the linea alba we expose the sheaths of the recti muscles and lastly the peritoneum. The layers then that we have to consider are the peritoneum, aponeurosis, the sheath of each rectus, the fascia and the skin.

Now let us see what the peritoneum is, how it heals and the time of healing. The peritoneum is a thin shiny membrane covering the abdominal viscera and lining the abdominal cavity. It is composed of connective tissue on the "wrong side" and covered by a single layer of endothelium on the smooth side. This structure is a "simon-pure" example of connective tissue as the endothelial cells themselves are derived from the same embryonic layer as connective tissue, (mesoderm.) Every one knows how readily and firmly peritoneum stick together when irritated and placed in apposition. This is clearly shown in the form of adhesions following inflammatory conditions in the belly. The process by which this takes place is as follows— "When two layers of serous membrane come to lie permanently and practically immovable upon each other there is a tendency to fusion between them. the endothelium covering the apposed surfaces disappearing and its place being taken by connective tissue." (Piersol's Anatomy.) This is caused by the two surfaces along the line of contact throwing out liquor sanguinis which rapidly separates into fibrin and serum, the fibrin forming a temporary cement and binding the two surfaces together. After this takes place new connective tissues and new blood vessels are rapidly formed uniting the two surfaces solidly. "The rapidity with which this preliminary agglutination occurs is well illustrated by the case reported by Oliver in which, after five hours, a sutured intestinal wall had formed a water tight joint." (Coplin's Pathology.)

Next let us consider the muscles. Muscular tissue is a highly specialized tissue with special functions to perform which are developed at the expense of its regenerative powers and does not take any part in the immediate healing of wounds. Muscles do not heal to any degree of stability, but can be trained to lie in certain positions. The pathologists tell us that repair of an incised wound of muscular tissue takes place entirely by granulation and scar tissue formed from the fibroblasts adjoining the incision, and that the muscular tissue itself makes only a feeble effort at regeneration.

Fascia and aponeurosis tend to heal slowly although they are of connective tissue origin. The reason for this is that these tissues are compact and

rather poorly supplied with blood causing the exudation of fibrin and the formation of new tissue to be rather prolonged. These layers however, make a very strong union when properly coapted.

Fat heals lightly if at all. It is poorly supplied with blood, its resistance is exceedingly limited, hence it breaks down easily and regenerates poorly.

Lastly let us consider the skin. Histologically the skin is composed of stratified squamous epithelium which is supported underneath by a very generous supply of connective tissue. In this tissue lie the blood vessels, nerves and lymphatics of the skin. The rapidity with which skin heals is a well known fact. This truth gave rise to the old adage "that wounds heal too quickly." Every surgeon has seen wounds that looked perfectly healthy from the outside, the skin having healed beautifully, which on further examination showed that the bottom layers had not healed at all, and that deep down in the tissues below the skin pus was present. In the healing of a skin incision the epithelium takes a minor part, although it covers the resulting scar the real tissue that is holding together and giving strength to the wound is the dense white connective tissue below, the chief part played by the epithelial covering being to prevent a weepy surface. The conclusion to be drawn from this is that the portion of the skin that really heals and gives strength to the incision is the connective tissue base. We take advantage of this as you will see later on.

Before describing the technique let us summarize just a little so as to see the significance of what we have been over.

First—Only connective tissue heals rapidly and gives immediate solidarity to the union.

Second—Peritoneum, being connective tissue, is a rapid and solid healer.

Third—Muscles heal very slowly and slightly, but may be trained to lie in certain positions.

Fourth—Aponeurosis forms a stout union, but is a little slow.

Fifth—Fat is a very poor healer.

Sixth—Skin is a rapid and safe healer, only the connective tissue base heals immediately and firmly.

The technique of our closure is as follows and is based on the above findings. In describing the technique we will presume that the incision has been made and the various layers exposed. Now we begin by loosening up the peritoneum on the opposite side of the incision so as to have a flap to pull up between the recti muscles. We use an interrupted suture of catgut going through first the rectus muscle, say on the left side, then through the peritoneum of the same side well back from the margin, then taking a liberal bite in the peritoneum on the opposite side well back from the margin (mattress fashion) then back through the peritoneum on the same side and out through the rectus muscle. This is continued all the way up until the incision is closed and the result is that you have two layers of peritoneum (rapid healer) brought up between the recti muscles (slow healer). The next step is to bring together the sheaths of the recti muscles and the aponeurosis, this is done in such fashion with an interrupted silk worm gut suture as to make a surface union instead of an edge to edge (lap over). We make no effort to close the fat, but our next attention is directed to the skin.

With a straight Hagedorn needle armed with horse hair we close the skin with a mattress suture so as to give a broad surface union avoiding the edge to edge coaptation. This same principle applies to the McBurney incision, to the right and left rectus incision, to the Camera incision, also the incision in the upper right quadrant usually made for operations on the gall-bladder. I have carried this principle on and in all operations for ventral hernia I use the peritoneum and skin, rapid healers, to make the contracted and retracted muscles come together and stay together. I have carried it on to inguinal hernia in the following manner—when I have dissected out the sac, which is peritoneum, I at once drop it into hot saline solution and when I am ready to close up I sandwich it between Poupart's ligament and the conjoined tendon of the internal oblique and transversalis muscles thus gluing them together. I have also used this same principle in the correction of ceacum mobile by pulling up the ligament of the ceacum and anchoring it in the incision.

The writer has been closing in this manner for about eight years and if I had all of them to do over again I would not change my method; and only the finding of something better will cause me to change in the future.

DISCUSSION OF DR. LONG'S PAPER

Dr. E. M. Summerell, China Grove: We have all heard Dr. Long's paper, and I trust that we have all most thoroughly enjoyed it, the more especially since it presents to our view an extensive vista of relief for suffering humanity. It should be a source of great satisfaction to us, if not of an equal amount of pride, that the author is a North Carolinian and a member of our Society.

One criticism I have to offer, and that is that it is too brief, but possibly the doctor's excuse lies in the same line as Sam Weller's, that the chief secret of successful writing lies in leaving the reader to wish that there were more of it.

Hernia is one of the chief opprobia of the surgical profession. It is either congential or acquired. As acquired it is due to mechanical violence, which, of course, includes surgical procedure. Every opening of the abdominal wall demands at the hands of the surgeon his most particular care and attention to prevent the occurrence or recurrence of a subsequent protusion of the visceral contents. It is proposed in this paper to show us a plan, a simple one, by which this object can best be attained. The method Dr. Long has most clearly indicated. Now, let us consider the why of this. On what scientific basis are the statements of Dr. Long grounded? To my mind, the reason for the truth of his conclusions depends upon the recognition of certain simple anatomical, histological and pathological facts. Anatomically, we have three membranes in the human body: dermal, serous, and mucous. Histologically, these membranes all have certain qualities in common, to only one of which I shall call your attention today. Pathologically, we shall have drawn our conclusions.

The one simple condition common to all of these membranes is the great quantity of lymphatics found in all of them. More than that, these membranes all possess more lymphatics than any other tissues in the body. The importance of the contents of these lymphatics—the lymph—in the process

of repair can not be over-estimated. It is histologically known that these vessels, whether saccular or vascular, are lined with a most delicate endothelium, the component cells of which, when irritated, become clearly individualized. And not only so, but stomata appear between adjoining cells, facilitating the escape of the vascular contents. There has been demonstrated in the fluid both fibrinogen and fibrinoplastin. In the presence of irritation the capacity of the cellular contents to undergo great proliferation is vastly enhanced. It is known that the progeny of the proliferation of these lymphatic cells is the chief, if not the only, source of the connective tissue so necessary for repair. I suppose that you will all agree that the firmness and solidity of the union of any incision depends upon the firmness and amount of the connective tissue therein developed.

In the plan that Dr. Long has shown us so clearly and lucidly, he makes an effort to reinforce the incision by securing the production of as large an amount of connective tissue as possible in the scar. To do this, he secures material with as great capacity for producing tissue as possible. This he obtains *in situ*. As he tells us, he uses the redundancy of the peritoneum, which happens to be the richest of the three membranes I have mentioned in the quantity of lymphatics. As a first step, he laps one margin of the peritoneal incision considerably over the other, and unites the two layers firmly with through and through sutures. Any free margin he carries up further into the incision and unites to convenient tissue, thereby reinforcing and strengthening the whole depth of the wound. By this simple technique of Dr. Long's the strength of the scar is much increased and the incidence of subsequent hernial protrusion correspondingly diminished.

But there is another membrane he calls upon to add its quota to the security against hernial protrusion—the skin. This is done by mattressing the deepest layers (those fullest of lymphatics), the consequent irritation of which furnishes further reinforcement and strength to the scar.

In conclusion, I trust that you will all agree with me that the facts narrated in Dr. Long's paper constitute a distinct and marked—I might say an epochal—advance in the surgery of the belly wall.

HYPERTHROPIC STENOSIS OF THE PYLORUS.

Dr. E. T. Dickinson, Wilson

After talking with a number of surgeons and pediatritians on the subject of congenital hypertrophy of the pylorus, and learning of the decidedly unequal experiences of these men with this trouble, I decided that a discussion here might prove interesting to us and profitable to many little ones yet unborn.

As the subject is barely mentioned in text-books except of the most recent issue, it is likely that most general practitioners entirely overlook this malady of the infant, or too long mistake it for a little indigestion. For a decade or more the writer never suspected a case, then after gaining some knowledge of its existence as a pathological and surgical condition, he found these cases not so frequently, to-be-sure, as appendicitis and cesarean section, but of sufficient frequency to prove decidedly interesting.

I am merely calling attention to the existence of this trouble, and to the salient diagnostic points leading to its differentiation from the common

forms of indigestion and the transient abnormal functions of the stomach and pylorus. My experience does not lead me to boast of any particular method of treatment, having been ultimately unsuccessful with the few cases treated. This fact should not discourage hope for discussion, as I understand the usual salvage is about fifty per cent. of the operative cases. My cases have unfortunately not been properly operative because of having been brought too near the grave before operation was allowed. It is to the best interest of all concerned that the profession and the public be informed on the point of necessity of early recognition and proper treatment, before the infant has lost the vitality necessary for the effort.

I feel sure these cases occur in the practice of most practitioners who treat mothers and their infants more often than is generally recognized, because several loomed up in my practice very soon after I had learned of its existence, as did also in the practice of my partner, and because I seldom see one or hear of one from other clientiels.

The symptoms of this malady are so distinct in cases so developed as to need operative treatment that there can hardly be a doubt in the mind of the practitioner, even after a perfunctory examination.

The infant does not grow or loses weight in proportion to the thickening of the sphincter muscle of the pylorus and the consequent closure of the pyloric orifice. His appetite is good and he takes food in a normal way, and retains it a variable length of time.

Sooner or later he vomits in a rather characteristic way, the contents being forced in a stream for several inches from the mouth, called eruptive or projectile vomiting.

At frequent intervals before vomiting occurs the outline of the stomach may be noted on the abdominal wall and the peristaltic waves can be plainly seen.

After the vomiting careful palpation of the abdomen in the region of the pylorus will often reveal a distinct marble-like tumor which is fairly movable.

A few drachms of bismuth subnitrate given in milk followed by x-ray examination will give a working knowledge of the degree of stenosis.

Even in cases of complete stenosis the stools may be of sufficient volume and frequency to satisfy the mother or the nurse, but proper examination will detect a marked deficiency, and the color and consistency will be far from normal, being dark, tarry and tough, or consisting almost entirely of bile, or of bile and mucus.

Treatment of these little cases should be well directed by a physician who knows much more of the pathology than the mother or nurse could possibly be impressed with. Left to the imagination of the loving mother and sympathizing friends these infants drift too far into starvation and the vicious circle of malnutrition.

Certainly some cases of partial stenosis recover. These cases show a stream of bismuth passing the pylorus very soon or immediately after the meal has been given. They should have bismuth and antispasmodics as therapeutic measures and a carefully regulated diet of milk, either mother's milk or modified milk as may be found to suit the individual case. Systematic gastric lavage is also instituted early and persisted in until recovery has taken place or more radical measures have become evident.

Operation should not be delayed until it is dangerous on account of excessive starvation. Two operations are advocated. Posterior gastroenterostomy which was the first operative procedure in these cases is still done and advocated by some. The Rammstedt or the Webber-Rammstedt operation seems to be the favorite of most operators at the present time.

In this procedure the abdomen is opened through the right rectus above the umbilicus. The tumor is delivered and while held firmly between the thumb and the forefinger of the left hand, an incision is made into the tumor in the line of the axis of the gut, extending the full length of the swelling. This incision is carefully deepened until the mucous membrane begins to bulge into it. With scissors the muscle is gently separated from the mucous membrane and the incision stretched open so that the mucous membrane is exposed for a width of an inch or more. If the stomach be distended slightly at this time with air it can readily be seen to pass freely through the pyloric opening. Or if a small stomach tube has been left in the stomach after the lavage it can be readily passed through.

DISCUSSION OF DR. DICKINSON'S PAPER

Dr. I. W. Faison, Charlotte: I am no surgeon, by any means, but I do have something to do with pyloric stenosis. Diagnosis can be made pretty easily with the x-ray and bismuth, but if you use your head, you do not need either. When these little fellows swell up and you see repeated perstaltic waves, you can easily recognize the condition. An operation is needed, though a few of them may get well without it, but too few get well to think of taking a chance without it. They recover rapidly. The principle is the same, that the muscle is cut through on the anterior portion of the stomach to the mucous membrane. One man would dissect the serous coat of the stomach and suture it over the cut membrane. Others stitch the omentum over the cut surface. I have one baby in the hospital now, four months old, who weighed eight or nine pounds when he was born and weighed seven pounds when he was operated on. He vomited almost everything. The trouble with these babies is that they are not turned over to somebody soon enough. That is too often the case, and it is too bad that the regular medical men will hold these little fellows until they begin to see the budding wings and then want to shift the responsibility. The operation was beautifully done, successfully done, scientifically done. The baby's temperature went down at once, though it has been to 101½ since. We began feeding him within half an hour. If you had seen that baby last Monday and saw him today, you would doubt that it was the same baby. Every case, as Dr. Deaver says about appendicitis, belongs to the surgeon and not to the doctors. When these little fellows get sick they belong to the pediatrician and not to the doctors.

DISCUSSION OF DR. DICKINSON'S PAPER

Dr. J. Buren Sidbury, Wilmington: I wish to bring out a few points in the symptoms of these little fellows. First, and most important, it seems to me, is the age of the patient. If a child is having projectile vomiting for the first time, at ten months of age he has not pyloric stenosis. Usually the vomiting begins from birth and is projectile in character. The baby may have nothing in its stools except meconium, he is usually constipated.

In describing the wave that is found in this condition, it starts on the right side, travelling somewhat like a rubber ball across the median line to the left, rhythmical in character and wave-like. Some times it goes in the opposite direction, at which time the child vomits. In regard to the tumor, that is one of the least valuable signs. At autopsy I have seen recently two cases, which died at nine and twelve months of age of other conditions. The tumor, the thickening of the pylorus, was still present. There is no tendency of these fibres to reunite and cause the symptoms if all the muscle fibres are divided.

In regard to the technique of the operation, there is one addition, so far as I know. Two of Dr. Bowne's cases at Babies Hospital suturing of peritoneum over the cut surface of pylorus which were operated on in the last four months died of hemorrhage. They were autopsied, showing that the only cause of death was hemorrhage. To relieve this, he has advocated suturing over the cut surface a layer of the peritoneum which will avoid hemorrhage. A very small hemorrhage may cause the loss of life in these little fellows. He advocates that this procedure be adopted by the surgeon as the means of preventing this secondary hemorrhage.

In the routine of determining whether or not a child has pyloric stenosis, two or three things would be done before the child is turned over to the surgeon. First, the stomach should be washed out; second, he should be given water to see the gastric wave; third, is the *retention*. Three hours after feeding the stomach should be washed out to see how much of the food is retained. In a normal baby at that age nothing should be left in the stomach at all after three hours. This procedure will give you some definite idea of the functioning capacity of the pylorus. The stomach content is not bile-stained. If there is any regurgitation of bile the possibility of duodeneal obstruction of some kind should be considered, rather than the possibility of plyoric stenosis. I agree with Dr. Faison in regard to the x-ray. The less these little fellows are manipulated the better. The simple watching for the gastric wave, the determination of the amount of food passing through the pylorus or the amount of retentions, will give you more information than all the x-ray men.

There is one point which I do not think has been brought out, and that is that when a child has lost one-third of his body weight that is the danger signal. Patients who come to operation before they have lost one-third of the original body weight are likely to have a favorable outcome of the operation. While patients who have lost more than one-third will not do so well. See that the child does not lose more than one-third of his body weight. Beyond that is the danger period. These cases, like any other cases of marasmus and malnutrition, are feeding cases. The child is still a problem after the operation, and may be a difficult feeding case all its life. The feeding is a problem for the pediatrician. As Dr. Faison has said, feed them early and increase gradually until the child is able to take care of the food that you give. One most important point is this, these children need *breast milk*. That will do more for them than any other thing except the surgeon. Without a skilled surgeon and without breast milk the child's chances for life are very, very uncertain.

Dr. Dickinson, closing the discussion: I want to say that I am very grateful for the liberal discussion of this paper, because this subject is in its infancy and I do not feel that the treatment will be successful until the procedure is far in advance of the present. No treatment is successful when there is a fifty per cent mortality, and there is no method at present of dealing with this congenital stenosis of the pylorus that gives better hope than fifty per cent.

"END RESULTS OF ONE HUNDRED CASES OF CANCER OF UTERUS"

Dr. J. A. Williams, M. D., B. S., F. A. C. S., Greensboro

I am not going to take up your time giving you statistics in regard to Cancer of the Uterus. We all know that thousands are dying every year from cancer, having its incipiency either in the cervix or body of the uterus. Of the one hundred cases in this report, seventy per cent were diagnosed early and a complete hysterectomy followed. Ten of these had a recurrence within three years and finally died. Two others had cancer of the liver two or three years later. Thirty were living two years later and in good health. Twenty were in good health five years after operation. Eight were living and in good health eight years after operation.

The above cases were in the earliest stages, the thirty remaining were advanced cases bordening on what we would consider the border line operable and unoperable cases.

I used Percy cautery on four of these for fifty minutes and in twelve or fourteen days did a complete hysterectomy on three. Of these all but two had recurrence within six months and died. On died of hemorrhage four days after cauterization, due to slough, before we had a chance to reopen and do a hysterectomy. One living six months after, with mass in pelvis but no indication of recurrence in vaginal mucus membrane.

Six cases proved to be epithelioma of cervix and by wide dissection of vaginal mucos and abdominal hysterectomy, all of these are living from two to four years.

The twenty left were unoperable, three were simply cauterized to stop hemorrhage. The rest were advised to use raduim but not being able, eight went home to be treated as best they could by family physicians. Nine others went to various places and used six to twelve treatments of radium at different periods. Two died in four months after return, two in six months. Two others in eight months and one other in one year. The other two, so far as I can see, radium has had no effect on, as there are large masses involving rectum and bladder, though they are still living. The radium stayed the disease perhaps but otherwise, I can see no results.

(conclusions)

I—That radium or Percy cautery may help stay the growth for a while but no permanent results.

II—That until the physicians examine their patients at intervals after child birth and keep tab on the irritation from laceration and from abortion and get the patient to be operated on early, there is no hope.

III—The public at large and especially the women must be educated to this fact and demand the examination early.

IV—That the great responsibility of this educational work rests on the family physician. Then and not until then will we see a decrease death rate from cancer of the uterus.

V—That my belief is, that if radium proves a curative of cancer, it must be used in the earliest stages of the disease and then not get any better results than the old teaching of dissecting operations, as it has been proven that radium is only effective in cancer of the cervix. I would prefer operative procedure until they prove more to my satisfaction than the present, the efficiency of radium treatment.

SUBPHRENIC ABSCESS.

George Wm. Pressley, M. D., F. A. C. S., Charlotte, N. C.

A subphrenic abscess is a collection of pus in contact with some portion of the under surface of the diaphragm. It is then not a subhepatic, or a perirenal or a liver abscess.

Fortunately it is a rare condition but at the same time it is a very serious one when it does occur. The man with very large surgical practice will see about two cases in a year; with very good practice about one a year; the average surgeon one in two years. This rarity of the condition tends to catch us unprepared and we lose valuable time in making the diagnosis, in fact we make our diagnosis in not a few cases afterwards.

The disease only dates back to 1845 when Barlow had a few words to say about it. No one paid any attention to him for thirty odd years when Volkman operated on a case and it was not till 1880 that a clean-cut diagnosis was made before operation when Von Leyden wrote his epoch-making paper. Since then we have known much about it, in fact much more than we have practiced perhaps.

We have two main classes of cases; post-operative and pre-operative. These can be divided into acute and insidious. The acute are usually rupture cases, the insidious are post-operative.

Barnard in the British Medical Journal, No. 1, 1908, gives us a very detailed description of the anatomy of the under surface of the diaphragm which is very helpful in explaining the pathology of this abscess. The crucial arrangement of the hepatic ligaments divides the inferior surface of the diaphragm into four compartments right and left anterior and right and left posterior. These four spaces are lined with peritoneum. The two anterior spaces are large while the posterior are small. Then we have two spaces, a right and left uncovered by peritoneum. On the right this extraperitoneal space is in the folds of the coronary ligament, while on the left it encloses the upper pole of the kidney. This arrangement serves admirably when all is well but in the presence of infection, like the pockets in the knee-joint, only more so, it adds immensely to the gravity of the situation. Further we remember that there is a depression in the superior surface of the liver called the cardiac depression but which serves as the touch hole or

starting point for this infection. As a general rule the abscess does not break through the falciform ligament and so remain right or left as the case may be whether intra or extra peritoneal. Most are right sided, in fact, we rarely see the left-sided kind.

Causes are as follows:

1. Rupture of hollow viscus as stomach, duodenum, appendix, gall-bladder or esophagus.

2. Suppuration in adjacent organs as infection of spleen, liver, kidney, lungs or pleura.

3. Infected ribs, vertebra or abscess of the thoracic wall along the line of the diaphragm.

4. Trauma, hematoma, foreign bodies as bullets, shreds of clothing or empyema drainage tube.

5. Metastasis of local infection as carbuncle, felon or tonsil.

6. Localization of general infection as in lagrippe.

The right-sided abscess is usually of appendiceal, gastric, duodeneal or hepatic origin.

The left-sided splenic, renal, gastric or esophageal.

The germ most usually found is the colon bacillus, next the streptoccus, in some cases the pus is sterile at time of operation especially if long delayed the orginal focus having been removed.

Quite a few cases give a history of amebic dysentery but no ameboid organism can be found.

In 1204 cases from the literature and private communications we have the following:

Due to appendix	322
stomach	280
gall-bladder, liver	181
duodenum	82
spleen	45
t. b. abdomen	29
pancreas	28
trauma	26
female genitalia	17
kidney	7
pleura	6
general peritonitis	4
costal	4
focal infection	3
undetermined	75

96 loosely stated as mostly appendix, next liver and gall-bladder, few stomach, duodenum, kidney, liver abscess, trauma and undetermined. In 129 recent cases, 100 recovered, 22.5% mortality

In 890 cases previous to 1910, 30% of the operated cases died.

The three operative routes gave the following:

Abdominal 214 cases,, 36% mortality.

Transpleuro-diaphragmatic 201 cases, 33% mortality.

Lumbar 47 cases, 23% mortality.

In 990 cases, 739 were intraperitoneal, 151 extraperitoneal.

CLINICAL HISTORY

Onset sudden or may be insidious.

If sudden the patient is seriously ill with upper abdominal pain, nausea, vomiting, pain hard to control andl vague as to exact location; may be epigastric, then diffuse abdominal, in the back, then chest or shoulder, or subclavicular, this last being fairly characteristic. Temperature may be subnormal for first few hours then up to 102. Chilly feeling in back and in some cases early cough and expectoration. Tenderness delayed several hours to several days, under costal margin on right side, epigastric or in chest or back or loins. Maybe absent in some cases throughout illness. Hiccough may be very troublesome. If insidious, the patient does not improve after operation for some suppurative abdominal condition. Anorexia, coated tongue in spite of regular bowels movement. Slight temperature, 99 to 101, shortness of breath on least exertion, cough, dyspnea, sallow complexion, pinched facies, visible alæ nasi movements with respiration, chills and sweats, wound doing well, every thing all right except the patient

TERMINATIONS

1. Pus may become encapsulated. Very rare.
2. May rupture into bronchus. Pus coughed up.
3. Rupture into alimentary tract.
4. Rupture into pericardium.
5. Point at unbilicus or in the loin.

Mortality depends on time of operation, if too early you miss the pus, if too late you miss the patient.

Average operative mortality 35 to 50%.

After acute cases patient may improve week or more, temperature and pulse to normal, some appetite, able to be up some with quart pus in subphrenic space.

DIAGNOSIS

The diagnosis is most frequently made by exclusion.

If you have a patient with some serious suppurative upper abdominal condition that you cannot possibly locate at all anywhere, the chances are that the patient has a subphenric abscess.

The temperature is not especially significant, may be high or normal.

Morning normal is the rule in many cases. Late in the disease the temperature is of course pyemic in type.

Pulse usually out of proportion to temperature elevation. In many cases however, the pulse will be normal, at least for the first half of the day.

Pain is severe and early in the rupture cases, may be slight and late in the post-operative cases. In both instances it is variable as to location, may be diffuse abdominal in the morning, thoracic in the afternoon, then in the back or loins. The supracavicular pain is said to be fairly characteristic.

Tenderness is more or less conspicious by its absence.

Leucocyte count always high, 18 to 40 thousand. One of the most helpful signs.

X-ray shows a high riaphragm more or less fixed, low liver line and frequently fluid shadow in the pleura.

Physical signs are triangular line of upper liver—border dullness, reaching its highest point in the mid—or anterior axillary line; epigastric dullness in sitting posture which disappears on lying down; lateral excursion of the costal margin on affected side. In long standing cases there may be bulging of chest or abdominal wall or in the back.

Aspirating needle is the proof of the pudding if positive, if negative of no value. Needle should be of large caliber, at least three inches long. It should be put in deep in center of dullness and bulging if any and suction kept on all the time, watch for air or serum but if these appear in the barrel push on.

COMPLICATIONS

Liver abscess, the most common and most frequent cause of death, pleurisy with serous or purulent exudate occurs in about one-third the cases. Pericarditis which may be serous or suppurative in character. Pulmonary abscess and septic pneumonia may be seen in many cases.

TREATMENT

The treatment is obvious, early free drainage. Do not pay much attention to the original focus.

Burke in Anals of Surgery, Oct. 1918, advises anterior incisions in all cases with counter drain if needed. Others recommend resection of 9th or 10th ribs. Possibly better both ribs and push up the diaphragm or the pleura can be opened in two stages or immediately by suturing the upper edge of the cut plura to the diaphragm and packing behind the proposed opening in the diaphragm. Use large tubular drains follow up extension if to pleura, lung or loin. If to liver the case is hopeless.

NOTE—I am greatly indebted to the surgeons who answered the questionaire sent out and thank them very heartily for their replies.

ASCARIASIS AS A SURGICAL COMPLICATION

HENRY NORRIS, M. D., RUTHERFORDTON, N. C.

You are all, no doubt, so familiar with the life history of the Ascarsis Lumbricoides that I shall not attempt to describe it as I merely wish in this brief paper to call your attention to the apparently very serious symptoms which may be caused by these worms after surgical operations.

I am sure that many of the surgeons here present will agree with me that it is an exceedingly rare thing to ever palpate a living worm in the intestine during the course of a laparotomy. In only one abdomen have I ever en-

countered a worm which was moving. In this case, a colored woman, whom I operated upon for some minor pelvic condition, through a median abdominal incision, I reached over to draw up the cecum and have a look at the appendix, and to my surprise felt something wiggling under my fingers. I brought up a loop of the ileum and could plainly see and feel within it the outline of a round worm; placing a lap pad about the gut, I made a small incision into it and drew out a worm fourteen inches long, which was very much alive. The nick in the bowel was closed and the appendix was then removed.

The reason that we do not feel living worms while doing abdominal operations is because they are narcotized by the ether. Probably many of them recover from ether as does the patient, while undoubtedly numbers of them are killed by the anæsthetic. It is to the latter group that I wish to call your attention.

In September, 1908, E. S., Male, age 12 years, was admitted to the Rutherford Hospital with a diagnosis of acute appendicitis, which was concurred in, immediate operation was advised, and performed. The appendix was found to be acutely inflamed, gangrenous near the tip and contained two concretions. The abdomen was closed in our routine manner and for forty-eight hours the post-operative condition of the patient was all that could be desired. His temperature then shot up to 103, pulse 140, respirations 28. His abdomen was slightly distended, but was not rigid, peristalsis was of very poor quality and the boy looked desperately ill. His tongue was very dry and his breath was peculiarly offensive. His wound was examined and found to be clean. A white cell count showed a slight leukocytosis. He complained of feeling very nauseated, but for several hours did not vomit, he then brought up a large dead round worm, twelve inches long. By the next morning his symptoms had returned to normal and his convalescence was entirely uneventful, except for the passage of two small worms following the administration of Santonin and Calomel. Since this case, we have had eighteen or twenty similar ones and are able to recognize the symptoms described above as due to the presence of a dead worm or worms, either in the stomach or small intestine. In the former location the symptoms are always more severe and patient appears more ill. The breath has an almost death-like odor. Pain has not been complained of by those patients who vomited the worms, but in cases in which the lubricoides were expelled from the bowel, cramp-like pains were experienced in the neighborhood of the umbilicus.

The symptoms are rather suggestive of peritonitis, except for the fact that there is no pain, peristalsis does not cease, abdomen does not become rigid and there is no vomiting until the ejection of the worm. A number of years ago I saw a post-mortem made upon a man aged about forty, who died with a clinical diagnosis of acute catarrhal jaundice following pneumonia. A large round worm had entered the common bowel duct and completely occluded it.

In those cases which we have in the Hospital a sufficient length of time before operation, routine examination of the stools prevents what is a distinctly alarming, and I believe, not uncommon surgical complication.

THE SURGEON AND ROENTGENOLOGY.

Dr. R. H. Lafferty, Charlotte, N. C.

To say the roentgengram and its accurate interpretation is practically indispensable to the surgeon is today a trite remark. It is universally recognized. The great war did much toward giving it its rightful place and the great dependence that both surgeons and clinicians place upon it is shown by the number of x-ray illustrations we find in our best journals and see at various medical meetings. While in so brief a time it is impossible to enumerate the many uses, it may not be amiss to mention a few and illustrate some of them.

The localization of foreign bodies reached its climax during the war, but in civil practice it is of great assistance. All can recall how we used to probe and probe for a bullet and then stop and wonder where it was. In determining fractures and dislocations and in ascertaining the position of the bones we have such a well recognized and ready help in time of trouble that it is hardly necessary to mention it. Then in determining the nature of a bone lesion it may often save us much useless worry and occasionally the patient a useless operation.

Over and over again the x-ray has been of service to the surgeon and internist in locating pus pockets, which had not been reached by a needle and in determining the presence of fluid in the lung; also in a study of the condition of the sinuses and antra.

When we turn our attention to abdominal lesions no one diagnositic procedure, unless it be Dr. Deaver's "diagnostic scapel" can equal the roentgen ray in importance. While the gall stone is not located readily, it is at times demonstrated and more often indicated by surrounding conditions.

The kidney calculus, ureteral or bladder stones can easily be located and we have not infrequently seen patients who might have saved an appendix and lost a kidney stone had the roentgen ray been employed before the operation. The location of many pathological conditions of the ailmentary tract and surrounding organs, the presence of adhesions and of many chronic appendices may be shown. To stop here to discuss what constitutes roentgenologically a pathological appendix would consume too much time—suffice to say that every appendix that is visualized is not pathological.

The barium meal (the priority of the use of which, has been clearly shown (1) was not German, but American) marked an epoch in the field of x-ray diagnosis. The advent of the pneumoperitineum marks another. By the injection of gas into the peritoneal cavity one may show clearly all the softer tissues, as the heart is seen embedded in normal lung tissue one may locate tumor masses and adhesions, differentiate between an abscess above or below the diaphragm and ascertain other conditions that we have longed to know. It has not, as yet, come into very general use and no bad results have been reported. Stewart of N. Y. (2) and Orndoff (3) of Chicago have no bad effects to report in over 200 cases. No one has yet seen enough cases to have become expert in interpretation, but it offers to us a new and very inviting field of study.

Finally in the field of therapuesis the x-ray comes as an important ally to the surgeon. Following the removal of every malignant or suspicious growth the x-ray should be applied. It will undoubtedly lessen recurrences and make your work more successful.

In conclusion I might say that it is the desire of the roentgenologist to serve the surgeon and clinician in diagnosing cases and in becoming as thorough as possible in examining a case. He has no desire to usurp their position in clinical study and in treating or advising the patient. I might venture to prophesy that in ten years from now there will be thousands of unused x-ray machines sitting around in doctors' and dentists' offices just as there were, and probably still are, static machines by the hundreds. The busy doctor will decide that he has no time for the work and interpretation of the plates.

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A TROUBLESOME COMPLICATION OF GONORRHOEA ITS TREATMENT.

HAMILTON W. MCKAY, M. D., OF THE CROWELL UROLOGICAL CLINIC, CHARLOTTE, N. C., FORMER MAJOR M. C., U. S. A.

Like the poor, gonorrhoea with its manifold complications and far reaching results will always present a problem worthy of careful consideration and study.

Even though we are living in an age of turmoil and unrest, of unions and strikes, it would be difficult to convince the genito-urinary surgeons that the gonococcus is a member of any union or will submit to an eight hour law. The never ceasing labors of this much dispised organism is responsible for much of the income of the specialist whose labors are confined to the genito-urinary tract whether he be known as urologist, genito-urinary surgeon or venereal specialist.

By the assembling of four million of our young men we, who are interested in the study of venereal diseases, had ample opportunity for study of one the foremost medical problems of the present day. In my opinion if the moblization of our army has taught any great lesson about the control and treatment of venereal diseases it is in brief, that we must put aside false modesty, secrecy, and prudery. Why should physicians whisper about Florida's 15.63% venereal rate or Vermont's 1.2% venereal rate? They should consider these conditions just as any contagious or infectious disease should be studied and proper steps taken to remedy the same. Venereals must be both spoken of and treated as infected members of society, each case being a law unto itself.

Since 1917 splendid work has been done to bring these diseases before the profession in a way which is both beneficial to patient and doctor, and I am thoroughly convinced that we cannot successfully treat the above unless

we are interested enough to give sufficient time, thought, and study to the pathology in each individual case. With out present knowledge of pathology which the gonococcus produces we should not have fixed in our minds any routine or standard method of treatment for the so-called specific urethritis but we should think in terms of a pus producing organism which has invaded a part or the whole of the seminal tract. In the ambulatory patient we are very often dealing not with a specific urethritis but with a urethrovesiculitis and often an epididymitis.

A familiar character to all of us is the unfortunate worshiper with his syringe and pet injection with the usual instructions to shoot until all ammunition is exhausted while the gonococcus is retreating to the posterior urethra, seminal vesicles, and thence to the epididymis where he can safely "dig in" for the winter. Once securely entrenched in one of his favorite habitats he little fears the barrage of drugs which are usually thrown upon him.

The gonococcus having suddenly and safely arrived in some portion of the epididymis it produces the most painful and troublesome complication of gonorrhoea, the symptoms of which are too well known and classic to enumerate in this discussion but if the treatment of this condition is an index to the pathology produced surely few of us have given the latter serious consideration or study.

A few points of interest in the pathology incident to gonococcal infection of the epididymis may not be amiss, first, the infection is both proliferative and destructive; second, abscess formation in some part of the epididymis is not the exception, but the rule; third, the tunica vaginalis is generally inflamed and is the seat of acute inflammatory hydrocele; fourth, in case of long standing the pathology is very similar to that seen in gonococcal infections of the fallopian tube.

While the surgical treatment of gonorrhoeal epididymitis is now generally accepted the usual treatment is palliative and expectant rather than surgical as was intimated in the early part of this paper. Rest in bed, the application of heat and cold, guiacol and ichthyol are too well known to discuss here.

In our army in France epididymitis was frequently a complication of gonorrhoea. In my opinion, more frequent than in civil life for two reasons,—first, because many were inducted into the army through the draft with chronic gonorrhoea who after long hikes with full pack would suddenly go down with acute epididymitis; and an extension of the infection from an old infected vessicle. I should like to term this class gonorrhoeal carriers. Second, soldiers who contracted acute gonorrhoea were required to perform the arduous duties of a soldier which kept the urethra and perineum muscles in motion, a prominent, predisposing factor of posterior urethritis.

The surgical treatment which was so acceptable and practicable for the military surgeon was epididymotomy. The object of this paper is not to bring you anything new but to commend this operation to you as worthy of trial and advocate it in selected cases of gonorrhoeal epididymitis, both acute and recurrent. This operation will insure a shorter convalesence (from three to five days in hospital) than the expectant treatment, with immediate relief of pain.

A slight modification of the operation described by Hagner of Washington, D. C., gives splendid results. The testis is held firm and rotated on its upper pole; an incision one-half to two inches in length is made down to the tunica vaginalis; the scrotal contents, having been delivered, the tunica vaginalis is opened and the contents of the accompanying inflammatory hydrocele is evacuated. The epididymis is now in plain view. It is examined and at some selected point is opened with catract knife. A Hagedorne needle is introduced and the point of suppuration sought for. Drainage, of preference, is instituted. The incision is enclosed in the usual manner, silk worm gut sutures are better left long, as in repair of the perineum, collodion dressing applied with suspensory or adhesive shelf as support.

CONCLUSIONS

1. Epididymotomy is the logical treatment in the majority of cases of gonococcal infection of the epididymis, because this operation is based on pathological findings which are essentially surgical.

2. By the immediate relief of the severe pain the patient is rendered comfortable and convalescent is much shorter than in cases which are treated locally.

3. A very small per cent recur, while the surgeon has the advantage of being able to treat the posterior urethra almost immediately after operation.

4. By the relief of tension in the early stage of the infection the prospect of sterility is minimized.

5. Early operation (within the first three or four days after the presenting symptoms) will afford the best results.

6. In recurrent infections of the epididymis you not only can remove a troublesome focus but in epididymotomy we have a valuable asset in preventing sectual neurasthenia.

DISCUSSION OF DR. MCKAY'S PAPER

DR. ADDISON G. BRENIZER, CHARLOTTE: This paper was very painstakingly prepared and a very good paper, but on a subject about which I do not know much. I failed to understand something that Dr. McKay said about presenting the testicle and using the Hagedorn needle. The paper was most excellent and I would be glad if he would explain more clearly.

DR. MCKAY, closing the discussion: This operation can be done in one of two ways. In Dr. Hagner's original operation he opens the tunica vaginalis and exposes the whole epididymis. Usually you can locate the point of suppuration. This point is then opened preferably with a cataract knife. Often the abscess is very small. The largest I have seen I suppose would contain about half a dram of pus.

The other method is simple. A small incision is made through the capsule of the epididymis, a hagedorn needle is introduced and the point of suppuration sought for.

I appreciate Dr. Brenizer's discussion of the paper very much. While I am on my feet I would like to mention that Dr. Vincent, of Tampa, Florida, who has a very skilled method, simply injects novocain and uses the

cautery. He failed to explain satisfactorily to me how to use the cautery, to evacuate the inflammatory hydrocele, but said it was an easy matter to empty the hydrocele after opening the epididymis. The inflammatory hydrocele causes much of the pain. In fulminating cases, produced by the gonococcus, we practically always have a hydrocele.

Gynecology and Obstetrics

The meeting was called to order at 10:00 o'clock A. M., April 21st, 1920. by the Chairman, Dr. J. M. Manning, Durham, N. C.

The section on gynecology and obstetrics will please come to order. I was very much in hopes that we would have a larger audience here on account of those who have prepared papers, including myself. The first paper to be presented in this section is "Some Phases of Obstetrics," by the Chairman, Dr. Manning, and I will ask Dr. B. L. Long to take the chair for a short while.

SOME PHASES OF OBSTETRICS.

Dr. J. M. Manning, Durham, N. C.

It is said that Hippocrates, the great Grecian doctor, after finishing his wonderful work on the Practice of Medicine, proclaimed to the ancient world that "he had written every thing that was known about medicine or ever would be known."

The first part of this statement we can admit; but the wonderful development and the great scientific discoveries that have been made since the days of the ancient writer prove the falsity of his prophecies, except perhaps in the field of obstetrics, because a child's advent into the world is the same now as it was then.

As chairman of this section I invited a specialist to prepare a paper on obstetrics for this meeting, thinking perhaps that he might furnish something out of the ordinary, but he respectfully declined; saying that he had nothing new about which to write. So I shall undertake, with some misgivings it is true, to present a few thoughts which have come to the writer during a period of thirty-five years spent in the general practice of medicine.

In so doing I am painfully aware of the fact that my experience in the practice of obstetrics is similar more or less to every other practitioner in the society, and I do not presume, nor can I say anything on this subject, which will furnish one spark of information to any of you.

Since Adam and Eve were sojourners in the garden of Eden and were not ashamed of the scantiness of their dress until Eve tempted did eat of the apple and passed it on to our distinguished ancestor, practical obstetrics began in the world and has been peculiarly active in all ages and among all people, civilized and uncivilized, jew and gentile, cannibal and cocanut twirler ever since. It is true that there are a few notable exceptions to the general rule, for we are told that Eve the mother of all had no mother herself, but the Lord God caused Adam to fall in a deep sleep, and from one of his ribs made woman. In the year Anno Domini 1920, Adam's lost rib is the most important part of his anatomical frame, for this rib is gaining much distinction in the industrial and political world, and when the suffragist amendment becomes a law this rib will become a shining mark for the politician's gun-fire.

There is another gentlemen who took a distinguished part in the activities of life in his generation and in whose honor and in commemoration of the manner of his coming the medical profession has christened that oper-

ation, which in this year of surgical progress is becoming more and more popular and less and less dangerous to the mother and child, commonly known as Cæsaran section, on which our friend, Doctor Woodard, will speak today.

So far as we are informed the remainder of the citizenship of the earth has been ushered into life in the usual way. It is not my purpose to impose on your patience a text-book dissertation on obstetrics, but to those who through lack of experience have not had the opportunity to develop any methods of their own, I respectfully refer them to such distinguished authors as Hirst, Williams, and Wright, who have so forcefully given detailed procedures in the management of cases of labor—before, during and after parturition. I might say this, it is well, when engaged to care for a pregnant woman, and subsequently to attend her in confinement, if a primiporæ, especially, to see that her pelvic measurements are sufficient to normally give birth to a child at full term. I would suggest that her diet be somewhat restricted as to the ingestion of red meats, and that she take a fair amount of out-door exercise and that her emunctives be kept in a healthy condition. Urinary analysis should be made at intervals of two or three weeks after the first half of gestation, and oftener if found necessary. If these preliminaries are satisfactory to the accoucheur there is abundant assurance that there will probably be a normal labor, but unfortunately for the medical attendant and likewise the patient there will be no positive assurance there will not be some serious emergency to arise at the time of parturition which will greatly disturb the doctor's composure of mind and at the same time throw the family of the patient into violent consternation. For instance, there may follow delivery a concealed hemorrhage with no outward evidences of such a serious complication. The patient complains of blindness, her face is blanched, her respiration is difficult and gives other evidences of a rapid disintregration. In an emergency like this the accoucheur begins to perspire and as the condition grows more serious the more active his sweat glands, until his face is bathed in a profuse perspiration. He realizes he must do something and do it quickly and he has no time to recall what obstetrical authors may suggest as the proper procedure. He must check this flow of blood or else see his patient fade away like a flower under the burning rays of a July sun.

The writer has had several experiences of this nature and so has every other doctor who has done much obstetrical work. Let me say to the young members of the profession in emergencies of this kind, don't lose you head, for the family of the patient will do this for you. Look wise no matter how agitated you may be on the inside, don't let this disturbance come to the surface. Never lose confidence in yourself. The important thing to remember in concealed hemorrhage is to empty, with your hand, the uterus of its blood clots so that this organ can normally contract and check the bleeding. Administer hypodermically ergot or pituitrin. Give stimulants, enteroclysis, or hypodermoclysis of normal saline solution, and last but not least hold your hand over the uterus until you know beyond a doubt that this organ is well contracted; then perhaps the mentally and physically exhausted accoucher can rest from his labors with the consciousness that the

life of his patient has been saved and his reputation, for there is no death in the community so sad and so ruinous to the hopes and aspirations of the doctor as that of a woman in confinement.

Picture, if you please, this scene—a country home, a woman in confinement a lone doctor with no trained assistance, and no available medical help, and an emergency as I have described—then this other scene in contrast:—a city physician (the man who writes learned text-books on obstetrics) a hospital, or a private home, two or three trained nurses, a medical assistant, everything to be used about the patient previously sterilized. His gown and gloves and his assistants' paraphernalia carefully prepared and at the conclusion of the ceremony an obstetrical fee that would make the country doctor smile the balance of his natural life. This is a striking contrast, but yet it is absolutely true. What experience has the latter with the former and how can he better overcome difficulties.

There is still another complication we sometimes meet in obstetrical work.

PUERPERAL ECLAMPSIA

The learned authors tell us that this condition follows a deficiency of urinary execretion, or rather a failure of the kidneys, and other execretory organs to properly eliminate the excrementitious products of the system. Toxæmia of pregnancy is a pathological condition produced by pregnancy, and which is generally relieved after the termination of parturition. The symptoms which generally appear during the second half of pregnancy are edemas of the extremities; urinalysis shows albumen, casts both white and red corpuscles. Unless this condition is relieved by treatment—medical, dietetic, and otherwise eclampsia is apt to follow.

Albuminuria in the early months of gestation, is indicative of either chronic or acute nephritis and is not necessarily followed by eclampsia, but this condition occurring in the seventh, eighth or ninth months of gestation is usually due to a general toxæmia associated with toxæmic kidneys. Under these conditions we may fear convulsions at the end of gestation because the system is poisoned by toxins resulting from imperfect elimination due to defects in the functioning of the intestines, liver, and kidneys.

The health of an individual is precarious at best:—He may be well today and sick tomorrow. We are often called to see a patient suffering with headache, high fever, coated tongue. We tell him that he has a bilious attack for lack of a better name. We give him calomel at night to be followed by a dose of epsom salts in the morning. The next day he is well. This man had an intestinal toxæmia, which has been relieved by flushing the sewer pipes and eliminating the poisons he has developed within himself, either through the ingestion of food, or defective tissue metabolism induced by the improper functioning of the organs of secretion and elimination. This equilibrium of health appears to be more easily disturbed during pregnancy than at other times. It is the disturbance of the balance between the production of toxins and their elimination. This condition in the pregnant woman is more serious because she must eliminate the poisons accumulated by herself as well as those of the growing fetus in utero and it is this condition that is followed by eclampsia. As a remedy I would suggest an abundance of epsom salts. Clean out the intestinal tract, eliminate thoroughly day by day.

I might go on if time permitted and tell of other serious emergencies that might arise in the practice of midwifery that would jolt the doctor, the patient, and the family but what is the use. The older practitioners have seen them all and the younger graduates of medicine as he pursues his weary way will in time meet them on the roadside. It will be up to him to make the most of them.

In conclusion, let me say that the life of the country obstetrician is a hard one, filled with doubts and uncertainties, headaches and heartaches. His reward will not be in dollars and cents, for the surgeon in one hour's work will receive many times the obstetric fee, but in the consciousness that he has done what he could to alleviate the pains of a woman in travail.

DR. B. F. LONG: Is there any discussion of this paper?

DR. MANNING, taking the chair: Now, gentlemen, is it the disposi tion of the members here today to discuss these papers as they are read or wait until all papers are read, which is not many, and have the general discussion afterwards? If the chairman doesn't hear a motion to the contrary, we will have the papers read first and the discussions later, because they are all corrolated subjects. No objection, so ordered.

CONCERNING THE DISEASES OF THE CERVIX UTERI.

DR. FOY ROBERSON, DURHAM

Many interesting papers have been written on cæserean section, uterine suspension, perineorrhaphy and other gynecologic problems, but very little has been written concerning that part of the internal genitalia of the female which bears the brunt of most gynecological pathology. I refer to the cervical portion of the uterus. Indeed the cervix is the portal of entrance of practically all pelvic diseases.

From the time the young girl enters the age of puberty until she has passed the menopause, the cervix is constantly in danger of succumbing to any of the pathologic conditions of which it is susceptible, and these are many. In passing, I will mention some of the most common; congenital cervical atresia, partial stenosis from acute antiflexion, atresia due to scar tissue, lacerations with subsequent hypertrophy, erosions and eversions of the cervical mucosa, endo-cervicitic, cystic degeneration, cervical polypi, chancre of the cervix, tuberculosis of the cervix and finally that most malignant of conditions, cancer of the cervix uteri. It will be observed many of the above conditions have their origin in childbirth or the venereal infections. Personally, I believe that cancer of the cervix is always due to either the results of childbirth or infection of some source. I have never seen a cancer of the cervix without a previous history of one or the other or both of these conditions. In other words, I have never seen a cancer of the cervix without a history of either laceration or endocervicitis. It therefore behooves us as medical men and surgeons to give more consideration to this part of the female anatomy in order that women may be saved from some of the dangers of developing malignant disease, also that they may be saved much unnecessary suffering. There is probably no more annoying condition than for a woman to be constantly troubled with a foul irritating leucorrhea which is practically always present in any cervical disease. Again it is not infrequent that menrorrhagia has its direct origin in some pathological condition

of the cervix. Not only may leucorrhea and hemorrhage be present, but sooner or later the individual becomes intensely nervous and complains of backache, loss of appetite, loss of weight, and ill health in general and finally if the condition is not relieved, there is great probability of the development of carcinoma as a result of a thing that was previously benign. Even at childbirth, a woman may bleed to death as a result of a laceration of the cervix opening into the uterine artery, and quite frequently puerperal septic infection enters through a lacerated cervix.

What then is to be done in order that such cases may be prevented from occurring or that they may be relieved after they do occur? First of all, the medical profession should do everything possible to co-operate with the campaign now being waged against venereal infection. I am sure that great good can be accomplished in this way toward preventing the specific diseases of the cervix. I also think that every woman who is delivered in a hospital or under such conditions that would justify such a procedure, should have a careful inspection of the cervix after delivery and should laceration be proven it should be repaired immediately. In this way we may possibly prevent a subsequent development of hypertrophy of the cervix with its accompanying erosions and leucorrhea, and possibly at the same time forestall an impending puerperal septic infection with its deadly results.

I feel, too, that quite frequently the physician or surgeon fails to examine carefully the cervix in the ordinary gynecological examinations thereby overlooking important pathology, probably because he gives his entire attention either to the perineum or to the uterus, tubes and ovaries. And even when disease of the cervix is known to exist as well as disease of other female generative organs, it seems to me that too frequently we are not willing to spend the necessary time in giving it the attention it really needs. Probably a beautiful hysterectomy or perineorrhaphy is done and the diseased cervix is left behind to cause the usual train of symptoms and possibly to develop later into carcinoma. I have seen carcimona develop in two patients who had never borne children. In one a bilateral salpingo-oophorectomy had been done for tubo-ovarian disease and the other had a supravaginal hysterectomy for pelvic inflammatory disease. In all probability the carcimona in these cases was produced by the constant irritation of a leucorrhea of long standing which had its origin in an infected cervix which was most likely a specific infection to begin with. I believe that if the cervical mucosa in these cases had been destroyed at the time of operation by the electric cautery or by excision, that malignant disease would never have developed and that these patients would have been saved much suffering before it did develop.

It has been my custom for several years in doing partial hysterectomies to first destroy the disease of the cervix with the electric cautery. True, it is a little troublesome and time consuming, but it is certainly time well spent and productive of much good, for the patient is practically always relieved of a troublesome leucorrhea and I have never seen cancer develop in such cases.

Last year at the State Medical Meeting, Dr. Heineberg of Philadelphia read before this section a most interesting and instructive paper on the medical treatment of the disease of the cervix uteri as a preparatory procedure to

either amputation of the cervix or trachelorrhaphy. He showed that much could be accomplished in treating the hypertrophied cervices with lacerations, erosions and eversions by medical treatment. In about 50% of his cases, he was able to relieve the condition entirely by medical treatment. The other 50% required amputation or trachelorrhaphy, but always in a more modified degree than when no treatment had preceded operation. His treatment consisted in first cleaning away the secretion with a weak alkaline solution, and then the application of silver nitrate solution. The silver was first used in 50% strength and later decreased to 10% strength. He also brought out in his paper that trachelorrhaphy was always to be preferred to amputation in women who are still in the child bearing period since about 50% of the women who became pregnant after amputation of the cervix aborted.

I do not think there is any place for the curette in treating these conditions. It probably does much more harm than good. I mention this because I know that quite frequently a curettage is done for leucorrhea. The treatment should be either medicinal applications or operative such as amputation, trachelorrhaphy, or the electric cautery.

Let me say finally that I believe all women as they approach the menapause should have thorough pelvic examinations made and that any existing disease of the cervix should receive proper attention. In this way many cases of cancer may be prevented.

TO SUMMARIZE

1. Diseases of the cervix uteri are many and are frequently present.

2. It should be routine in gynecological examinations to make a thorough examination of the cervix, and the treatment proper should be given.

3. Wherever such disease is found to exist and supra-vaginal hysterectomy is indicated, the cervical mucosa should either be exercised or destroyed

4. Medical applications are splendid, especially preparatory to opeartion, and frequently they make operation unnecessary.

CESAREAN SECTION IN ECLAMPSIA.

C. A. Woodard, Wilson, N. C.

Eclampsia always constitutes a condition of emergency. It is a culmination of the effects of toxic influences that at the time of the seizure have already been poisoning the system for weeks or months. Throughout the pregnancy the patient may show symptoms of the disease which give ample warning of the danger to be encountered, or the explosion may come wholly unannounced, as instanced by a case of mine, which manifested no symptoms —no swelling, no headache, no eye symptoms, passed a negative physical examination and exhibited a normal urine as late as 24 hours before the attack.

The toxins, whatever their origin, not only circulate in the blood but attack the various organs of the body, notably the liver, the kidneys, the brain and the lungs. The liver presents the most interesting pathology. At autopsy there are found spots of necrosis—hemorrhagic and anemic—there may be cloudy swelling or even general autolysis. The picture is sugges-

tive of that of acute yellow atrophy of chloroform poisoning. The brain shows œdematous areas and anemic spots with occasional hemorrhages and areas of softening. The kidneys show varying degrees of nephritis, the parenchymatous type predominating as a rule. The lungs are congested and at times œdematous with thrombi and emboli here and there. The pneumonia that sometimes intervenes is a complication and not a part of the disease *per se*. The œdema is the clinical manifestation most evident in some cases.

One cannot examine these organs without wondering how the patient lived with so much destructive pathology, for of course it is inconceivable that these necrotic areas and degenerative changes could have developed after the convulsion. And such pathological changes explain why the condition is still so resistent to treatment and enables one to understand why even the most reputable methods of eliminative treatment fail in a certain percentage of cases to check the progress of the disease. The toxins destroy the tissues of vital organs, and as in the instance of the brain, enter into combination with the cells, so that the elimination of the toxins from the blood only gets rid of a part of the poison and leaves the patient still suffering from the damage already done to the cells.

It is interesting that the disease displays a variation in the predominance of involvement of the several organs, the symptoms giving a clue to the particular type according to the degree of involvement; that is, one case will show a predominating kidney involvement revealed by the urinary findings, another will show by the nervous and mental symptoms that the nervous system is the seat of the greatest amount of damage, another that the lungs are attacked as evidenced by the symptoms and signs of pulmonary œdema, still another will be jaundiced revealing severe disease of the liver. All these organs are involved, but in varying degrees in different cases. These points are of importance in management of the individual cases.

As to the treatment of these cases, it is pretty generally agreed that the uterus should be emptied as soon as possible, though Stroganoff's expectant method has its advocates, especially for cases so situated as not to have access to surgical treatment.

In cases in which labor is well under way and dilation of the cervix is sufficiently advanced version or the application of forceps is rational surgery, but if the eclamptic seizure takes place before labor begins when the cervix is not dilated, or if the passages are contracted or any other obstruction exists to prevent easy instrumental delivery, and the patient is not infected, I think Ceasarean section is indicated.

The operation is simple and is attended with less shock in this class of cases than version or the use of forceps, and certainly the child has a much better chance for being delivered alive. Anæsthetics are objectionable, but it requires little more for a section than for a version or instrumental delivery. Indeed it often takes less time for a section, and if morphine and hyoscine are administered before beginning the operation, one is able to get through with very little anæsthetic. The amount of traumatism in Cesarean section is less in many cases, and if the operation is performed with reasonable dispatch it is attended with very little additional shock.

Several types of operation have been devised, as the extraperitoneal and

the Porro operation for septic cases, but in the purely eclamptic cases that have not been examined too much the simple transperitoneal operation is most suitable.

The usual preparations are made for an emergency abdominal operation and the bladder is emptied. An incision is made from a couple of inches above the umbilicus to three or four below, the uterus is delivered or not as the operator may prefer. If the uterus is delivered a towel should be spread over the abdominal wound to protect the intestines or prevent contamination with the uterine contents. It sometimes facilitates matters to clamp the skin together with forceps behind the uterus. An incision is made through the uterus from the fundus down the mid-line for from four to six inches, the child is delivered, the cord divided between clamps, the placenta delivered and the uterus wiped out with gauze. Pituitrin may be administered hypodermically before the uterine incision is made but usually the uterus contracts sufficiently without it. An assistant's hands around the cervix controls bleeding until the wound is closed.

The closure of the uterine wound is an important step in the operation, as indifferent closure may allow insecure healing and predispose to rupture in subsequent labors. It is essential to coapt the sides of the wound snugly and to draw the sutures taut. Various methods of suture are used. My preference is for closure with three layers of running sutures, using No. 2 chromic catgut for the deep layers and No. 1 for the peritoneal layer. The first includes the deeper half of the muscle down to the mucosa, the next takes in the rest of the muscle layer up to the peritoneum and the third brings together the peritoneal layer. It is important that the sutures be accurately applied and that the knots be tied securely, and that the peritoneum be coapted perfectly to prevent adhesions. Occasionally an interrupted stitch here and there will be necessary to prevent ooze. The omentum should be drawn down behind the uterus, and the abdominal wall closed in the usual way.

The post operative treatment is the usual after abdominal operations plus the eliminative treatment for the eclampsia—morphine and hyoscine for the nervous manifestations, purgatives and diuretics to induce elimination and alkalies to overcome acidosis. In some cases phlebotomy is a most valuable aid. I do not care for sweating as it makes the patient restless and likely does as much harm in this way as it does good by the small amount of toxic matter eliminated.

I do not wish to be judged as advocating Cæsarean section as a routine in eclamptic cases, but in selected cases I am of the opinion that it is a treatment of choice, for it frees the child from the hazard of delivery and is attended with less shock and traumatism to the mother.

OVARIAN TUMORS.

Dr. John B. Nicholson, Worthington

During 16 years of surgery and general practice, perhaps the gynecological thing that has come to me most frequently, except minor conditions such as lacerations, etc., has been ovarian tumors. This, while a condition that yields readily to surgical procedure, is distressing, when encountered in ig-

norant whites and negroes. Frequently have I had patients, sufferers for years, brought to me in extremis because of ignorance and prejudice.

About ten years ago a negro woman, 42 years of age, enormously distended, came to me, she could hardly breathe. She had waited eighteen months for the delivery of a child. Upon opening the abdomen we found a large cyst-adenoma, (multi-locular glandular cyst). This growth was very adherent to the parietal peritoneum. This is a large and common variety of ovarian cysts. These cyst masses are filled with a gelatinous stuff, which at times leaks and spreads over the intestines, giving the appearance of malignancy. There was no leakage in this particular case. It is well however, to say when rupture of this type of cyst does take place that the cells inside the cyst continue to secrete this gelatinous material in large quantities. The cyst should be removed and as much of the gelatinous material as possible. Nothing can be accomplished by washing out the abdominal cavity.

Dermoid cysts of the ovary have been rare to me. We have had only two. One a large cyst of the left ovary in a white woman, 45 years of age; this cyst contained hair, in large quantities, very long and could be combed, some teeth and sebaceous material. The other dermoid was of the right ovary in a white girl, 15 years of age. This contained a small amount of hair and much sebaceous material. Both of these cysts were above the average in size. In children and young girls these tumors are at times extremely malignant, recur rapidly and terminate fatally; these are teritoma. Dermoids also leak and a remarkable case has been described in which so much sebaceous material had leaked into the abdominal cavity that the abdomen pitted like soft clay. Quite a number of cases have been reported in which, when the surgeon opened the belly, the peritoneum was found covered with nodules, from which grew tufts of hair. These "epithelial weeds", as they are called, differ from cancer nodules, in that they do not invade the underlying tissues.

We have seen one fibroid ovary. This operation was not done for the ovarian condition but for the removal of what was thought to be a large fibroid uterus. This fibroid uterus proved to be a very large malarial spleen, (twelve and a half pounds) which had descended and was resting on and adherent to the uterus. The spleen was removed, also the fibroid ovary, which was not very large but about the size of an orange. The patient is living. This operation was done fourteen years ago so there was nothing sarcomatous about this fibroid ovary. These fibroid tumors undergo degenerative changes as do uterine fibroids, they become cystic and calcify. They are found in the young and the old.

We have never seen a sarcoma of the ovary, unless the dermoid cyst in the girl fifteen years of age proved to be one. This removal was done such a short time ago that I am unable to say as to its malignancy. I have no pathologic report on this growth. Bland Sutton has collected one hundred cases of cystic ovaries in girls fifteen years and under. Of this series forty-one were simple cysts, thirty-eight simple dermoids and twenty-one sarcomas. This is perhaps too small a percentage. He says that sarcoma does occur more often, as it does in other paired organs.

Papillomatous cysts are not so rare, but are very puzzling the first time

one encounters this type of growth. The first impression is, that the thing is malignant, that all to be done is close the abdominal cavity because while in the early stages the papillomatous processes are confined inside the cyst wall, the cyst wall soon ruptures and tumor resembles a huge cauli-flower, with the warts spreading out over the entire peritoneum. Hydro-peritoneum is also present, due to peritoneal irritation. This is a hopeless picture. However, the removal of the growth, in most instances, can be done with good results. One case recorded by Pye Smith, at Guy's Hospital, London, a woman was tapped 299 times between August 18th, 1884 and April, 1894. She came for the three hundredth tap and died. The post-mortem showed a papilloma of both ovaries, which could have been relieved by operative interference. On the other hand these tumors will sometimes attain an enormous size without bursting.

We have never encountered a carcinoma of the ovary. These growths are secondary to cancer of the gastro-intestinal tract or gall-bladder. So these are metastatic or implantation cancers. The cancer cells invade the adjacent tissues and become grafted on to the cystic ovary. The primary focus should, of course, be looked for whenever we encounter a growth of the ovary with carcinomatous appearance.

Cysts of the broad ligament. We remember quite a large one, as large as a medium size watemelon. These cysts are found between the anterior and posterior folds of the broad ligaments and contain simple fluid. They can be enucleated easily, care being taken to avoid injury to the uterus. At times much oozing hemorrhage attends this operation, then it is best treated by marsupialization.

It is known now that hydatid cysts, slow effusion of blood, tuberculous exudates, and ovarian cysts sometimes will become enclosed in a fibrous tissue capsule formed by the exudate from the peritoneum, which their presence excites. These are known as Spurious Capsules and are often misleading, however, we can remember that true ovarian cysts always project from, never inside, the broad ligament.

Cystic growths are pedunculated usually and sometimes undergo axial rotation, producing symptoms analagous to strangulation of the intestines, minus foecal vomiting and this may even take place confusing us in the diagnosis. When cysts suddenly enlarge and give symptoms of axial rotation, if no rotation be found on opening the abdomen, then we usually have free intra-cystic bleeding.

Sometimes when opening the abdomen the cyst is found to be suppurating. It is hard to understand this rare condition, since the cyst is air tight. We know that the chief sources of infection are the tubes, intestines, vermiform appendix, tapping and puncture by foreign bodies. Bland Sutton reports a suppurating cyst due to puncture by a fish bone through the rectum. The cyst was behind the uterus and adherent to the rectum. The blood stream is also undoubtedly a source of infection in systemic diseases, as is evidenced by reported cases of suppurating cysts, due to the typhoid bacillus. This organism has been isolated from such cysts in many instances.

"THE TERMINATION OF PREGNANCY FOR THERAPEUTIC REASONS."

Dr. F. Webb Griffith, Asheville, N. C.

In this brief paper I shall not discuss those cases where the uterus is emptied for an inevitable abortion, missed abortion or dead foetus, but only that group of cases where the pregnancy is terminated before term out of consideration for the health or life of the mother. Criminal abortion, whether done to avoid disgrace or simply to limit the size of a family we all condemn. Still more severely do we condemn the physician who violates the confidence and trust placed in him by the state, by doing a curettement under the deceptive diagnosis of "endometritrus" or "dysmenorrhea" when in reality he is knowingly doing a criminal operation. When a curettement at the patient's home is discouraged by the profession and when all scrapings obtained at the hospital are examined routinely by the hospital pathologist, such practice will automatically cease. There comes occasionally to every physician and frequently to those of us who do gynecology, the necessity for deciding whether or not the life of the foetus should be sacrificed in the interest of the mother. During the four years from January, 1916 to January, 1920, my records show that pregnancy was terminated before the viability of the child in twenty-five cases. An analysis of these cases I shall use as the basis for this paper. In every case there was at least one and usually two consultants who kindly shared the responsibility with me. In eleven of these patients the indication was pulmonary tuberculosis.

In a health resort like Asheville it is not surprising that pulmonary tuberculosis should head the list of causes for therapeutic abortion. Just what is sufficient indication to justify emptying the uterus in a tuberculous patient is still a much mooted question. You will see one patient who has apparently only a slight lesion, and that well arrested, pass through pregnancy nicely, and then after labor rapidly go to pieces, either by a flaring up of the pulmonary lesion or by a general miliary tuberculosis. On the other hand one with an advanced lesion can occasionally go through without apparently doing much damage. I believe we are perfectly justified in these cases, in giving certain amount of weight to the wishes of the patients themselves. Where a woman has two or three children we are not quite as much justified in taking a chance with her health and possibly her life by allowing pregnancy to continue as we would in a childless couple anxious for offspring, especially if they are willing to accept the risk after it has been fully explained to them.

Some of my good friends, whose opinions upon pulmonary tuberculosis carry great weight, maintain that we are not justified in terminating pregnancy more than once upon the same patient. They tell their patients that pregnancy has been terminated in the interest of their health or life, but should they become pregnant again they do so at their own risk and must go to full term and bear the consequences. That attitude I cannot quite understand, for, if it is the duty of the medical advisor to safeguard them the first time why not the second time? That is like saying to a patient, who has by indiscreetly getting wet or chilled developed pneumonia, that all medical skill would be used to save him this time, but that should he

commit the same indiscretion again he must suffer the consequences without the help or alleviation the physician might be able to give. To me the more rational procedure would be to say to the patient that should she become pregnant again, we will terminate pregnancy, only however, upon the condition that we be allowed to go a step further and sterilize her. Some of these patients are young and while at the time not in shape to go through a pregnancy, yet it is possible that a few years later they may be so improved as to be perfectly justified in taking the risk. In such cases instead of doing the usual ligation and cutting of the tubes, it would be wiser to employ some of the methods which aim at temporary sterilization.

The technic described by Carey Culbertson in 1917, appeals to me more than any other I have seen. It consists of a high abdominal incision, starting just beneath the umbilicus and extending downward. The uterus is caught with uterine forceps and brought backward toward the promontory of the sacrum. The left round ligament is then caught about 6 cm. from the uterine horn and lifted up. A forceps is then passed through the "clear space" of the broad ligament from before backwards and the fimbriated extremity of the left tube brought into the anterior cul-de-sac and stitched with a fine catgut suture. The right tube is then treated the same way. Beginning at the point where the left round ligament passes into the left inguinal canal the round ligament is stitched with continuous catgut to the anterior parietal peritoneum down its entire length to its junction with the fundus. The same is done on the opposite side. A fold of the anterior parietal peritoneum is now brought across the fundus from one round ligament to the other.

This procedure leaves the tubes patent and opening into a small cul-de-sac completely shut off from the rest of the abdominal cavity. Culbertson performed this operation thirty-one times, but unfortunately has not yet had occasion to "unsterilize" any of the patients. So that while it is very pretty theoretically it may not work out so nicely in practice. However, it gives the patient hope that some day she might be in shape to become pregnant and she does not have that mental depression which sometimes follows when a woman realizes that she is permanently and irreparably sterile.

For the pernicious vomiting of pregnancy, operation was done eight times. These cases were all given treatment by their family physician before being brought to the hospital and in some cases where the condition was not too desperate on admission treatment was continued in the hospital. We have been guided entirely by what seemed to be the condition of the patient rather than by the estimation of the nitrogen output as advocated by Williams. When the patient is anxious for a child and will give her full cooperation in the treatment it is surprising what can be accomplished, even in the most desperate cases. When, however, the patient strenuously objects to the discomfort and treatment and to any further increase of the family the physician has a most difficult task. If he has not the cooperation of the patient and the moral support of the husband to make at least a reasonable fight, he should drop out of the case.

Cæsarean section, placenta prævia or the toxemia of pregnancy after the seventh month are not considered because they do not decrease, but rather increase the chances of the child and therefore do not come in the scope of

this paper. However, in one case of pre-eclamptic toxemia the child, although born alive, died within twenty-four hours. The one case of eclampsia which was at the six and one-half month was seen in consultation at a hotel twenty miles away. The patient had been having convulsions for twelve hours, numbering in all about twenty. As it was out of the question to move her to the hospital, a room was hastily prepared and a vaginal cæsarean section done, after which she had only one slight convulsion and made an uneventful recovery.

In only one case have I had to empty the uterus for a pyelitis, and that was in a woman about five months pregnant. As a rule, passage of a renal catheter and washing out the pelvis of the kidney suffices either to relieve the condition or to tide over the patient until after labor. In this case, however, the patient was admitted to the hospital in such a desperate condition that it was obvious radical treatment was urgently indicated. In one case the uterus was emptied about the third month, for a progressive exophthalmic goiter. Following this patient was kept at rest until her symptoms improved and then a thyroidectomy was done. In one case a five weeks pregnancy was terminated in a patient who had a short time previously been through two major operations and had also had a rather severe hemorrhage from a gastric ulcer.

The last case of my series was a most interesting one. A girl aged fourteen was brought to me with the history that for several months she had not menstruated. Examination showed a general fullness of the lower abdomen but no definite enlargement of the uterus could be outlined. Further examination showed what appeared to be a complete atresia of the vagina. More careful search under an anæesthetic revealed a small opening into the vagina just large enough to admit the smallest sized probe. Upon enlarging the opening into the vagina a hæmatocolpos was encountered. After cleaning out the blood clots the uterus was then felt to be enlarged. I naturally concluded that we had also a hæmatometra, so I thoroughly dilated the cervix and upon starting to remove the suppósed clóts from the uterus I was surprised to find a pregnancy approximately three months. It was then too late to do anything but proceed and empty the uterus.

In conclusion I again wish to emphasize the great responsibility which these cases place upon the medical profession. We should call in as consultants, those who are especially fitted to pass upon the disease for which curettement is proposed. In that way the family physician and the gynecologist will be restrained from rushing into an operation for insufficient reasons, or on the other hand, what is equally as culpable, will not allow a patient to drag along, day after day or week after week, until irreparable damage has been done.

DISCUSSION

Dr. Moir S. Martin, Mt. Airy, N. C.: This is an interesting series of papers. The paper that I am especially interested in is the one on Cesarean section by Dr. Woodard. The points in our work that I would especially like to call your attention to are: First, in regard to the anæsthetic. In eclamptic cases the anæsthetic is a very important consideration. In our work we use exclusively Gas and Oxygen. Of course in the majority of cases the patient is given one-fourth grain of morphine and then it is some-

thing like thirty minutes to an hour before the operation is started. This might cause some criticism because some of our best men contend that we should not use opium in any form. Personally, we have used it and have never seen any bad results following it. By this method your patient practically wakes up on the table, that is, if not too deeply unconscious from the toxæmia, in other words, comes out from under the anæsthesia and you have no bad results following your operation as you would in ether or chloroform. Gas and Oxygen in our opinion is the ideal anæsthetic in these cases.

The second point, is the administration of soda and glucose solution by the Murphy drip after the operation as a post-operative procedure, with elevated bed or the Fowler position. This has been very satisfactory in our work; at least we feel that it has helped us to overcome the toxæmia in these cases. Those of us who have tried the alkaline solution in this class of cases know that it is of benefit, as to how it does it that is another question.

Dr. Lawrence, Winston-Salem, N. C.: In 1916 I read a paper before this Association on diseases of the cervix and vagina, and tried to point out some of the dangers in these cases as a result of manipulation and operation. If we study the cytology of carcinoma of the cervix and vagina we find that the cancer cell is a displaced epithelial cell. We start with the normal epithelial cell, and as a result of irritation proliferation takes place and goes on to the extent of breaking down the basement membrane and displacing itself in the connective tissue when it becomes a cancer cell. This is very simple pathology; but the average text book on pathology is about six or seven hundred pages, and when one begins to read the pathology of cancer he soon becomes disgusted with it and puts the book back on the shelf.

McCarthy of the Mayo clinic has made the study of cancer quite simple, and one who has read his works has been enlightened along that line.

In cancer of the cervix, I thoroughly agree with the paper that was read on the etiology of it; that it is due to trauma, and the trauma may be produced in many ways, chief among which of course, is childbirth. Next we may mention instrumentation et caetera, and an effort on the part of the cells to repair the damage causes them to multiply in many numbers, and for want of a better place than their normal location, they break down the surrounding tissues and grow wild. Recently I have seen two very interesting cases of carcinoma of the cervix that interested me very much. Both of them happened to be in colored women, and they both happened to be young women, one thirty-one and the other twenty-nine years of age. They both had cancer of the cervix, both had had pelvic inflammatory disease. One was operated on in Durham by a colored doctor and the other was operated on in Winston-Salem by a colored doctor. I do not know what was done in either case. I saw them about one year after their operations and the cancer at that time was extensive, involving the cervix and vagina and extending out into the broad ligaments on either side. I think there is no doubt that these cases were caused by trauma aided by infection and should teach us a lesson in treating gynecological cases; that is we should not handle the cervix or tissues any more than is absolutely necessary in treating diseases of these parts. We should repair lacerations of the cervix

and vagina at the time they occur in cases of obstetrics, if they can be done, and it can be done in a hospital and in a majority of the cases in private practice. There are cases, of course, remote from hospitals that cannot be properly treated in these cases, I think they should be sent in as soon as possible or proper aid be given them at the earliest possible moment—that is as soon after labor as possible. In repairing the cervix and vagina one should be extremely careful to see that he does not turn in epithelial tissues in doing the plastic work, in other words all tissues should be proximated evenly and well.

Now all of us that do general surgery have complicated obstetric cases sent to us for treatment; while I was intern in a hospital we had sixteen vaginal cæsarean sections and I do not remember how many abdominal sections. Since I have been out I have done something like twenty vaginal cæsarean sections, and about ten abdominal cæsarean sections. I could not give you the exact figures as to the number of cases or results obtained without referring to my cases, but in general the results have been highly satisfactory. In cases of eclampsia and placenta prænnia I invariably do a Cæsarean section provided there is not sufficient dilatation and a pelvis that will permit delivery by vagina. It is the most rapid and appears to be the most rational way of delivering the woman. Every surgeon has a particular technic of his own and if he gets good results from that technic it is the thing for him to do. For instance, in regard to anæsthetics—in most cases you do not give much anæsthetic, but I make it a rule if there is a competent doctor around and especially an older man I ask him to give chloroform because it requires very little, it is most satisfactory in these cases, and in my experience I have never seen bad results following its use.

After the operation I simply put them to bed and keep them warm, give them plenty of fluids in the form of salt solution, glucose and soda solution and treat the symptoms as they arise. In the last three cases I have had in the past five months all three mothers and the children and even the father have lived.

Dr. Woodard: Once in a while we see something as dramatic in medicine as surgery. These cases of toxemia of pregnancy start out with symptoms due to the pathology of the pregnancy, but owing to the inability to retain food later develop a starvation acidosis and this added affliction may even dominate the picture. It is in this type that the soda and sugar solution produces the most brilliant results.

I may mention a case typical of the class. The patient had been treated by the usual methods but had steadily grown worse until her condition had become so critical that she was sent to the hospital to have the pregnancy terminated. However, the administration of the soda and sugar solution by the Murphy drip produced immediate improvement and the patient had no more toxic symptoms, but passed on through an uneventful convalescence to a normal pregnancy and continued so to full term.

With regard to the anæsthesia in eclampsia, of course, this is one of the most important points in the management of these cases. The ideal would be to get along without a general anæsthetic using only local as suggested by Dr. Roberson. But, as Dr. Lawrence has indicated, these patients generally come to you after having had several convulsions and are often coma-

tose, and, therefore, require very little anæsthetic. Usually the cases we see have had morphine; just a little anæsthetic to get them on the edge of narcosis and you are able to proceed with the operation.

As I mentioned before, some of these cases have a predominating liver involvement; in these one would avoid chloroform. In a case showing beginning pulmonary œdema one would avoid ether. In a case showing predominating kidney involvement one would prefer to use neither one, yet in the majority of these cases the amount required is so small that I feel that the objection to their use is more theoretical than practical.

Dr. F. Webb Griffith, closing discussion: Dr. Roberson asked one or two questions.

One of them was—what are the indications for the termination of pregnancy in tuberculosis. Personally, I don't have to decide that, for in Asheville we have a whole host of lung men who can decide it for us. However, in a general way there are two groups of cases, those who are far advanced with tuberculosis and where it is obvious that tremendous damage will be done if pregnancy continues to full term; the other group where the lesion in the lung is so slight that to allow pregnancy to proceed to full term the patient is deprived of the excellent chance she would otherwise have in getting over her tuberculosis. I recall a case where a curettement was done and the condition of the mother immediately greatly improved. She soon became pregnant again and her physician, a most competent specialist in pulmonary diseases, felt that he could not give his sanction for a second curettement. Patient went to full term, gave birth to a healthy child and died shortly afterwards. That brings up a fine moral question—Is it better to prolong the life of the mother for a few months or even a year or two and sacrifice the child, or should a short time of the mother's life be sacrificed in order that a child may have its chance to live out its normal life? Frankly I do not know how to decide such questions. The very hardest cases to decide are those early cases of pulmonary tuberculosis where the patient has every hope of getting well if she is not pulled down by a prolonged pregnancy. So that by doing a curettement you give her the one chance in her life to be well and probably in a few years she can have healthy children. These are the cases where the lung men must decide and not the surgeon. In the toxemia of pregnancy if you have in association with you two level headed physicians I believe they can usually decide pretty well when the patient is getting to the danger point.

I have enjoyed Dr. Roberson's paper very much and am glad to see that we are getting more and more away from what has been described as "Gynecological tinkering." Local application and tampons have a very valuable place, but I know of nothing which is more overdone than such treatments. You recall that the outer part of the cervix is lined by many layers of epithelium and the blood vessels underneath give to these layers a bluish tint. Now the inner lining of the cervix has only one layer of epithelium and the blood vessels showing through appear red. So that when there is a bilateral tear the physician frequently sees this red everted inner lining and calls it ulceration. He will apply silver nitrate or some other caustic which will cause a proliferation of epithelium and he then consideres the ulceration cured. After a time these proliferated cells desquamate and the condition

recurs. The patient is then given another course of treatment and the same cycle will be kept up as long as the patient will stand for it. Just as Dr. Roberson has pointed out either these patients need nothing at all done or else they need radical treatment such as repair or amputation of the cervix.

As to cancer of the womb there are two types, the squamous-celled and the adeno-carcinomata. I have never seen a case of the former except where there has been some trauma to the cervix, such as instrumental dilation at pregnancy. After doing a hysterectomy I think it is an excellent procedure to cup out the mucous membrane of the cervix for in so doing you can get a better closure and will prevent a subsequent leucorrhea. While this cupping by removing the glandular element of the cervix would theoretically prevent adeno-carcinomata it obviously could not prevent squamous-celled cancers.

The paper on cæsarean section has been very interesting. In a great majority of cases the decision for or against Cæsarean section is entirely the question of the child. If you have a dead foetus or if pregnancy must be terminated before the child is viable, Cæsarean section is practically always contra indicated. Very often vaginal Cæsarean section should be done in preference to the abdominal, but after all is said the method should be chosen which gives the greatest safety to the child without correspondingly greater danger to the mother.

EYE, EAR, NOSE AND THROAT

WHAT CONSTITUTES GOOD TONSIL SURGERY.

JOHN W. MACCONNELL, M. D., DAVIDSON, N. C.

What constitutes good tonsil surgery? This question is propounded in no cynical mood, nor in criticism of any colleague's work, neither have I any new or startling method of my own to put before the Society. My idea in this discussion is to arrive at some basic facts in connection with tonsil surgery as it is generally done, and as we would like to do it, two conditions which are not at all times similar. The proposition of tonsil surgery in its simplest analysis is only that of removing two vestigial glands in the right and left faucial regions, on account of their diseased condition.

The operation is not a new one—rather the reverse, for it is one of the oldest operations in surgery. The early Greek and Roman surgeons divulsed the tonsils, tearing it out with a hook or with the finger nail, both of which practices are still in use and some operators make a great deal of their work of finger dissection and speak of it with some show of originality. whereas both Hippocrates and Celsus advised the method, the former as early as 460 B. C.

Tonsil enucleation is difficult because of the location of the tonsil, which is rather deep in the throat and surrounded by prominent structures and the operation is complicated by the free bleeding and salivary secretions accompanying any surgical procedure in these parts. To overcome the difficulty of operating in a narrow space, at a fair depth, various instruments have been designed, many of them freakish in appearance, some utterly void of any mechanical attraction or convenience, but designed frequently by one who was lacking in manual dexterity, and who had tried to overcome his awkwardness with an instrument of many twists and turns. I was interested in counting the number of instruments listed for tonsil surgery in one of our recent catalogues. There were advertised in one catalogue alone 122 instruments for removing faucial tonsils, surely a travesty on surgical skill.

Good tonsil surgery consists in removing the tonsil in its capsule entirely, without injuring adjoining structures, particularly the faucial pillars and the musculature of the pharyngeal region. This being the proposition, it is wise to acquaint ourselves with the surrounding tissues to avoid injuring any, and to remember the anatomy of the parts. The tonsil is embryonic tissue, developed in three lobes, which sometimes remain, but generally only two lobes can be made out in an adult tonsil. These are the two lower lobes, the superior lobe being found only on deep inspection of the supra-tonsilar fossa. The plica-triangularis is an operculum of tissue covering the upper part of the tonsil in its embryonic development, then splitting into an anterior fold the plica-pretonsillaris which runs down to the base of the tongue, and a posterior fold—the plicainfra-tonsillaris, the two folds with the base of the tongue forming the fossa-triangularis. This is the region in which we work and all these tissues are to be respected, and should remain uninjured in a tonsil enucleation.

The tonsil rests in this area surrounded by a distinct fibrous capsule. Its size and shape vary, but the surrounding structures are constant, though

they may be distorted by adhesions and frequent inflammations. The blood supply is chiefly from the tonsillar branch of the facial artery—which branch breaks up into smaller vessels at it enters the tonsil, and these follow the trabeculæ of the capsule as it is infolded in the lymphoid tissue. In tonsils chronically inflamed, there is often developed a plexus of veins much larger than the normal, and which give great trouble in post-operative oozing without there being a specific bleeding point to ligate. The facial artery may take an upward swing where it passes beneath the tonsil and it is a possibility that it may be injured by a sweep of the knife in the deeper tissues—the writer has never seen this accident. The lower part of the tonsil may be supplied from a branch of the lingual and the posterior superior part by the palatine branch of the ascending pharyngeal. I have seen this latter condition a number of times as I am sure all of you have, and it shows as a rapid spurter in the upper segment of the tonsillar fossa.

Good tonsil surgery—should be as surgery in any other part of the body—that is it should rest upon proper respect for tissue, a proper acquaintance with the parts, every vestige of tonsil should be removed, no other tissue should be removed, and a proper hemostasis should be maintained both during and after the operation. Tonsillotomy, slitting of crypts, and the galvano-cautery have no place in good tonsil surgery. If the case needs removal of tonsils—they should be removed—just as an offending gland or tumor would be removed in any other part of the body. To do this there is only one true surgical operation and that is the enucleation with knife or scissors of the entire tonsil and its capsule, leaving the pillars undamaged, ligating any bleeding points before finishing with the patient. Whether a snare is used at the latter part of the operation is a matter of no particular importance, though most of us do so, for the lower border of the tonsil is not well defined and runs down sometimes to a point as thin as a shaving, and the snare will follow the line of demarkation down very successfully. The operation mentioned will remove all tonsils not a group of selected cases and the writer considers it the only true surgery of the tonsil. Finger dissections and the Sluder operation will be a success in a certain percentage of cases, but the writer does not think that it is wise to select several different methods of tonsil enucleation when one operation can be perfected which will successfully remove any and every tonsil. The operation outlined is equally good whether the patient is under local or general anæsthesia, and whether it is a child or an adult. The writer uses novocaine for all cases of local anæsthesia and ether for general anæsthetic. Results are as good under local as under general anæsthesia, though naturally we can work more rapidly and easily under the local. Some of my colleagues inject a small amount of adrenalin-novocaine solution into the anterior pillar even when ether is used and, while not strictly a good surgical procedure it has advantages for the prevention of capillary oozing during the operation, shortens the time, and if the operator is experienced, as my colleagues are, the same respect for tissue will be maintained whether there is oozing or not. In the hands of some, the procedure is not wise, for the operator is more daring when the tissues do not bleed and frequently goes deeper than he thinks and has secondary hemorrhage when the effect of the adrenalin wears off.

I am advocating no particular type of knife or scissors. Just a good sharp

instrument introduced under the anterior pillar of the tonsil where it is not adherent, then sweeping the knife around the tonsil going well up under the frenum of the plica, for if the upper lobe is well separated the operation is half done. Traction towards the median line enables one to strip the tonsil down to its inferior pole which may be divided with the knife or snare. Retraction of the anterior pillar forward allows inspection, then any bleeding points are caught and ligated, or twisted until the fossa is dry. Especially should the fossa be dry before the patient leaves the table or operating chair. At no other time will the patient be under such good control, and if they are taken in the operating room later to have something done to stop any hemorrhage, however slight, they have lost the necessary confidence, and are fearful that some accident might have occurred.

Hemorrhage is the bugbear of most tonsil operators and is not altogether a fanciful danger for severe hemorrhage does sometimes take place, and any man who does a sufficient number of cases will have some which will bleed. My own routine is to give the calcium salts the day before the operation in large doses, and I am confident I have had less capillary oozing or venous hemorrhage since that time. In my experience I have had four hemorrhages which were severe, though in a retrospective view they do not appear as alarming to me as they did at the time. One was an operation to remove stumps from a previous tonsilotomy of another surgeon some years before. I was operating in a strange hospital without any of my own instruments and did a scalpel dissection in which I may have wounded the pillars and the bleeding kept up until the blood pressure was lowered enough to make the flow stop. The second was on a case of known hemophilia, when I was more daring and less experienced than now, and the bleeding kept up a couple of days, then ceased and the ultimate results were excellent. The third was a middle aged man with a case of pyorrhea—which cases have always seemed to bleed more than others. This oozing kept up for twenty-four hours and the patient was severely shocked before it corrected itself. The fourth was in a choreic young girl, at the age of puberty—was secondary in character—lasted twelve hours—was due to a small piece of tonsil left under the plica in the upper fossa and as the patient was removed to her home before the bleeding commenced I found myself handicapped by not having proper assistance. In a hospital her case should have been easily controlled.

I mention these cases to show that I have not yet reached my ideal in tonsil surgery. My work in examining college students for the last thirteen years and two and a half years of army service in examining the throats of thousands of men has given me a fair index as to now tonsil surgery is generally done over the United States, for I never look into a throat which has had an operation that I do not ask, who operated and how long since. I beg you to notice that I make no comment on the character of the work to the patient and I think we should always be careful in our remarks to the laity upon the result of any operation for such misunderstanding can be avoided thereby. The errors noticed might be summed up as follows:

First, failure to remove the entire tonsil. There is no question that if the tonsil is entirely enucleated it does not return but if part is left, it may continue to hypertrophy and the former condition be unremedied.

Second, removal of a part of the constrictor muscle of the pharynx. This muscle is sometimes rather adherent to the capsule and if many of the muscle fibres are removed a hardened scar results and the patient will complain of a feeling of tightness in the throat which is uncomfortable.

Third, injury to the pillars, by the knife or snare, and in occasional cases, part of the velum palati has been removed and the uvula as well leaving a distorted pharynx.

Fourth, some general surgeons who remove tonsils are frightened by the blood, which is more than occurs in many abdominal operations and they seek to prevent it by suturing the pillars which is always bad practice, for if any vestige of tonsil remains it will be deeply embedded and give trouble certainly, and the sewing of the pillars together causes undue tightness of the pharynx. If at any time it becomes necessary to suture the pillars to prevent hemorrhage the sutures should be removed early and an elevator passed between them, separating them permanently.

Conclusions: There is a great improvement in the tonsil surgery of the past few years, but there is the tendency to experiment upon different types of instruments and operations rather than adopting a simple surgical technique and perfecting that operation which will suit all cases.

2. Though some continental surgeons hold that tonsillotomy is an operation of choice, our experience in America is that the entire tonsil should be removed in its capsule and that if the operation is thoroughly done no injurious consequences ever follow, and that such consequences are due to imperfect surgery and not to the tonsil operation per se.

Dr. J. B. Greene, Asheville, N. C.: I wish to express my appreciation of Dr. McConnell's excellent paper.

It pleased me, particularly, that the dissection of the tonsil is advised rather than the Sluder method. I am of the opinion that the latter method is losing somewhat its former popularity.

The doctor speaks of venous hemorrhage from the tonsillar fossa after operation. It has seemed to me that such bleeding is practically always arterial, though at times the artery is difficult to locate.

In reference to the administration of Calcium Salts prior to operations, I would like to state that I have little faith in such medication since the use of this drug some years ago in a case in which I particularly desired immunity from troublesome bleeding, was followed by most annoying hemorrhage. Since that time I have not used Calcium lactate, and have had little postoperative bleeding.

In reference to the use of adrenalin chloride in our local anæsthesia solutions, I am in the habit of using eight drops of the one to one thousand solution for the removal of both tonsils. I realize that some operators refrain from the use of adrenalin chloride for the fear of early secondary bleeding. This has been a rare symptom in my experience.

Dr. J. P. Matheson, Charlotte, N. C.: "I think the Society should express their appreciation to Dr. McConnell for such a timely paper, and such a thorough discussion of the subject. I would like to mention one or two things that I consider important in tonsil surgery.

To make tonsil surgery easy, as well as effective and to do the least

amount of traumatism to the patient's throat, it is necessary to have a first class anæsthetist, and I prefer one who is constantly giving ether for tonsil work, and who at the same time can act as your first assistant. This makes the operation much quicker, much safer, and often with very much less traumatism to the patient's throat. Second, in local work, I prefer to do these in my office, and keep them there for three hours afterwards, and then send them to the hospital. In this way you save considerable time, your patient has very much less excitement, and in case of hemorrhage or other complication, you have easy access to your patient, and can give your immediate personal attention. If at the end of three hours there is no *sign* of tonsil bleeding, you can feel very comfortable. Usually hemorrhages of the tonsil after local begin to show very soon after the operation, or at the end of about two hours, and in having your patient present on a comfortable couch saves a considerable amount of time, annoyance, and excitement should it become necessary to stop a hemorrhage.

CONSERVATISM IN TREATING FOCI OF INFECTION.

By J. G. Murphy, M. D. Wilmington.

When I promised our late co-worker and friend, Dr. E. Reid Russell, at the close of the Pinehurst Meeting to write a paper to present at this time, I had in mind writing on "Astigmatic Corrections," and results we get from same, but I have been so impressed in my practice during the year with the importance of the subject I am bringing to you that I thought this would be of more practical value and especially so if it brings out a discussion. That would be worth more to us than the paper itself. Of course any doctor is obsolete and behind the times who does not believe in foci of infection, and not only believes in them but practices hunting for them in his daily work. While I am writing this beginning of my paper, there is under my care a patient who came in recently with a disturbance of vision, and on examination I found him to have a lens opacity. He was too young for a senile cataract so I began to look for a cause for a visual disturbance of this type and I found the antrum under the affected eye to be full of pus. This was drained and in ten days he was relieved of symptoms that were present before, and his vision is improving.

Now, do not think that I am coming to you to write on the hackneyed subject of simply clearing up foci of infection for that is an idiom in surgical practice today, but what I do wish to emphasize is this, that the focus of infection may be far remote from the organ giving the symptoms, and about which we have been consulted and in our zeal for the patient, and by our lack of knowledge of the proper mode of treatment of the focus as located by us in our examination we are apt to suggest a line of treatment, which will probably be carried out by the specialist to whom we send him, because of the fact that we suggest that such should be done. Would it not be better if we would send the patient to the specialist to whom his focus belongs, and ask that they decide on the best means of relieving a condition which we have found to exist. Possibly by the process of elimination we have located the focus producing existing symptoms in our field of specialty. The one to whom we send the patient is better fitted to pass on these conditions than the Ophthalmologist or Oto-laryngologist. I can make myself clearer in correcting these errors we have made by sighting some cases which have un-

doubtedly come into the practice of every specialist here present, for instance, we have myriads of symptoms and on examination find that the focus causing these symptoms is in the teeth, and we, using a degree of positive authority, tell the patient they must have their teeth extracted, and our advice is likewise carried out, and our patient becomes a victim of our ignorance. We have assumed to pass on a subject which should be decided by the dentist. You can see our mistake because the doctor to whom he goes thinks we have some reason for our positive advice, when in reality we are only asking to remove the focus of infection. The specialist to whom he is sent might be a dentist who prefers, and according to his practice does more easily relieve by treatment, than by the more drastic means of extraction.

There is no harm in taking out the appendix as a possible source of infection, nor is there any harm caused by removing tonsils. These organs have no functions, but do not advise removing the teeth unless you are competent to make such a diagnosis.

THE RELATION OF PUBLIC HEALTH WORK TO THE BUSINESS INTEREST OF THE EYE, EAR, NOSE AND THROAT SPECIALISTS OF NORTH CAROLINA.

G. M. Cooper, M. D., Director, Medical Inspection of Schools, State Board of Health, Raleigh

Mr. Chairman and Gentlemen:

When I was awarded the courtesy by your Chairman, Dr. Banner, of having a part in this program, after several days consideration of the matter I decided to accept the generous invitation extended to me, and chose for consideration the above subject. It is my purpose to discuss this question briefly, frankly, and impersonally. In order to keep our perspective clear and because he has expressed so definitely and concisely my own conception of the work of the physician individually and as a class, I am quoting the following paragraph from a recent presidential address before the American Neurological Association by Dr. James H. McBride, of California:

"It is an important truth that nothing stands alone in this world, not even a medical association. We go up or down together. We are here today not solely because we are physicians, but also for the reason that society created us as a profession because it needed us, and we are therefore always serving its purpose. Our most private work is really a social and public work, so that in all we do we are going on the errands of society. Each one of us is an essential part of this moving human order that keeps society together and holds humanity to its sober task.

"In this period of industrial and social reconstruction, when all interests are becoming intertwined, when human interspaces grow smaller, and new relations create problems that change our views of life and society, it is necessary that the medical profession also make certain readjustments and that it annex human interests to its older activities, if its members are to maintain its fine traditions and keep step with social progress."

Something like ten years ago, when the real progressive sections woke up to the importance of enforcing compulsory vaccination against smallpox as the only means of combatting that disease, and when the wide-awake school

boards of these same sections began to enforce the requirement of vaccination before pupils should be admitted to the public schools, considerable apprehension spread throughout the length and breadth of the State on the part of a great number of physicians, many of whom openly expressed the fear that the activities of the health department in the control of smallpox was going to make serious inroads into the income of the private physicians, and that by paying for this vaccination service by the day and to a single health officer in each county or city, instead of farming it out on the basis of private fees, strenuous opposition developed as the perusal of the literature of that day will afford abundant proof. This attitude is looked upon today as ridiculous and the private physicians still have work to do.

About five years ago, when the State Board of Health began its first systematic effort at the control of typhoid fever, one of the methods used, especially for its educational value, was the offer of voluntary free vaccination against this disease. Here again we were met by the same cry that the State Board of Health is encroaching in the field of private practice, and that the physician's income is placed in jeopardy. The fear and apprehension was so wide-spread here that it became necessary for the Secretary of the State Board of Health to discuss this matter formally at the meeting of the State Medical Society as late as April, 1917. Today that attitude on the part of these physicians appears just as ridiculous or even more so than the fury against public vaccination against smallpox. The physicians are still doing business and making more money than they ever have in their lives.

There are today in North Carolina 836,000 school children enrolled in the school census of the State. From accurate facts that cannot possibly be disputed there are not less than 125,000 of those children needing operations for removal of diseased tonsils and adenoids so badly that their parents, their teachers and their neighbors will readily assert this fact. Many thousands more of them have defective vision, latent and incipient tuberculosis, defective hearing and other easily preventable defects, to say nothing of the 75% of this great total who have dental defects. Thus you see today, right this minute, in North Carolina there are 125,000 children that need this operation. They need it badly. The number is being each day augmented by the new recruits of children coming six years of age entering school. There are at the other end of the line passing out of school on into adult life others who are carrying their handicaps, as I have done, all their lives for the lack of this operation. Thus you see if the specialists in North Carolina who have license to practice medicine and have hung out as specialists, both part-time, full-time, or what not, were to begin operating on these children, supposing that they were presented for the service, each man of you would have to operate on 1475 children before the end of the year to clear up what is enrolled in the schools today. This estimate is lower by at least 5% than has ever been published by any responsible agency in the United States, a recent writer in the Saturday Evening Post giving a 25% higher estimate for the country at large than this.

Now, what are the real facts concerning these operations? It is this: Less than 1% of these children under the system that has been in vogue in North Carolina up to and including the present, on the part of the special-

ists and the public generally, will ever even consult a specialist. Less than 10% of them will ever even consult a general practitioner. Why? Because they have never been convinced of the necessity for such remedial treatment and because of the morbid fear of the word *operation* and all that it implies. This applies to the people who have the money as well as indigents.

The only concern the State Board of Health has in this matter is to convince the people of the necessity for these operations so that every effort possible may be made in order that they have it done for the benefit of the next generation of men and women of North Carolina. The work that the State Board of Health has been doing is to make a mighty effort to arouse widespread interest as to the necessity for the operation. We have found everywhere that the first thing that had to be combatted was that it is not a scheme to make money for doctors.

The one reason that medical inspection of schools as practiced in a routine manner in the United States has been productive of so little real good has been that when a child is examined in school by a medical inspector or nurse and a note sent to the parent advising that the child is not physically normal and urging that a physician be consulted, ninety-nine out of every hundred of them throw the card in the fire with the comment that "this is just affording jobs for doctors who cannot make a living, and for old maid nurses; and then it is being done chiefly in the interest of doctors who want to get the children to treat." Consequently, when we take it absolutely out of the field of commercialism and center our whole efforts on the operation, only beneficient results may be expected to follow. To do this without classification of childrn according to social or financial standing, race, color or creed, we are finding a much better comprehension of what the operation means. And what it means, when this sentiment is crystalized and universally accepted by all the people in North Carolina, to the business interests of every specialist practically a one-eyed man or a fool could readily see.

Again the best time to do these operations and the time that we urge upon everybody is in the pre-school age immediately preceding the starting of the child to school. It is a common practice now to hold children out of school, as a rule, until the beginning of their seventh year, and very wisely so I think. Therefore, we urge upon the people the necessity of having these operations done during this period—from five to seven years of age,—when possible. That naturally places this in the hands of their private practitioners and private specialists, because school physicians have nothing to do with the children until they are enrolled in school. You can see there the enormous business benefits to the specialists wherever this advice is accepted and put into practice.

In conclusion, I may state that the prime reason for the existence of a department of medical inspection of schools of the State Board of Health is (1) to find defective children and get them treated; (2) to convince the parents and guardians and teachers of the children from Cherokee to Currituck of the necessity for the correction of remedial physical defects as early as possible; (3) it is our aim and intention to work in the utmost harmony with the medical profession, especially the specialists of North Carolina,

and with the teaching profession and school authorities in the attainment of this idea. Your assistance is needed and will be appreciated now and in the future as in the past.

Wm. S. Jordan:

Mr. Chairman:

"I had not intended having anything to say in regard to this matter, but I must object to the suggestion that the chief objection to doing this work in this way is because it deprives the doctors of fees that ought to be paid. There are plenty of doctors who would be willing to do any number of deserving cases for no fee at all and too without being known in the transaction for that matter. I feel that it is unbecoming to seek the cooperation of the profession by holding out the benefits of the advertising received. If it is a good thing to do the doctors ought to be glad to render the service and keep their personalities in the background. If there were no other objections to the method this one is enough to place it outside the proprieties of practice. As a matter of curiosity it would be interesting to know how many of those engaged in this work would do it so enthusiastically or at all if they felt they were to be deprived of the advertising they receive thereby."

Question:—Dr. Louis N. West and Dr. H. M. Bonner.

"How are operators selected to do clinical work for the North Carolina State Board of Health?"

Answer:—Dr. G. M. Cooper.

"I can best answer that question by giving a recent illustration in the matter of selecting operators for a clinic to be held in Duplin County within a few days. The nurse was instructed there while making her survey throughout the county to ascertain from the parent of each child requesting an operation, and also from the various physicians practicing in the county, who their choice of an operator would be if it was a private matter. The result was that the choice was about equally divided in different portions of the county between one Wilmington specialist, one Goldsboro specialist, and one Raleigh specialist. Therefore, I have arranged a three-day clinic, conducted one day at a time by each of these three specialists. The department has made every effort to be absolutely fair to all reputable specialists practicing in different sections of the State. We have tried to be just as fair as if the selections were made in private practice."

THE COMPARATIVE VALUE OF ROENTGENOGRAPHY AND TRANSILLUMINATION IN DIAGNOSIS OF DISEASES OF THE FRONTAL AND MAXILLARY SINUSES, WITH DESCRIPTION OF AUTHOR'S METHOD OF ORBITO-PALATOBUCCAL ROUTE OF TRANSILLUMINATING THE MAXILLARY SINUS.

H. H. Briggs

Roentgenography and transillumination offer valuable objective evidence of the condition of the superficial nasal accessory sinuses. Which of the two is more valuable is debatable, depending upon the anatomical relationship, the modus operandi, and upon how much the observer has studied the various methods of each while comparing his diagnosis with his surgical

findings. The one method supplements, frequently corroborates, and occasionally refutes the findings of the other. If they did more they would together form the sine qua non of sinus diagnosis, and their findings would be pathognomonic. If taken jointly, and in connection with other symptoms and signs, they often prove to be determining factors in establishing a diagnosis, and frequently suggest the proper therapeutic procedure. All agree that the roentgenogram better outlines the sinus, and offers definite limits to guide the operator. It alone furnishes positive evidence of absence of a frontal sinus, the shadow of which by transillumination might indicate an infected sinus. On the other hand, the rays making the plate must pass through the head, the greater part of which is foreign to the parts we wish x-rayed. Consequently there may be in the plate misleading shadows caused by many parts within the cranium posterior to the sinuses. On the other hand the translucency of a sinus is little interfered with by extraneous parts except by slight variations of thickness in the bony walls and overlying soft tissues. Transillumination requires less skill, is quickly and inexpensively done by the clinician himself, while the rœntgenogram, correctly made, is the product of a rather highly specialized, and, therefore, expensive technician, requiring careful interpretation by either the technician, or preferably the clinician. It is just as essential for every clinician to be able to interpret the rœntgenogram—altho he may not have made it—as it is for him to perceive the translucency of the sinus by the electric light. Every sinus plate reveals details to the interpreter which no one can fully describe to him, and to operate from another's findings is like striking where someone points.

Rœntgenography: It is not intended to describe here the technique of making sinus plates other than to discuss the two usual positions of exposure, namely, the nose-chin, and nose-forehead positions of the plate, and to describe the special advantage of each in exposing the frontal and maxillary sinuses. In either position the axis of the tube should be parallel with the plate, and the principal rays should pass through the special part to be radiographed at right angles to the plate. Authorities agree that a soft tube with intensifying screen and a moderate amount of milliamperage are best adapted for the deep penetration and detail demanded in sinus rœntgenography. (Waters and Weldron (1) American Journal of Rœntgenology, February 1915, VII, Number 4, page 633.) For the sake of correct detail the part to be exposed should be placed as close to the plate as possible. At the same time consideration must be given to the density of the tissues through which the rays must pass before entering the sinus which is to be x-rayed, and to fulfill these conditions the position approximating the nose-chin position of the plate is most admirably adapted for the maxillary sinus. The base of the skull offers two prominences of bone of considerable resistance; viz: the lesser wings of the sphenoid, and to a much greater degree the petrous portions of the temporals. It is, therefore, desirable to select a position that will allow the projection of these parts to fall on the plate outside the projection of the sinus which is to be x-rayed.

In the nose-chin position the projection of the lesser wings of the sphenoid bisects the orbits horizontally, and are seen as narrow curved lines passing outward and upward through the orbit, and the petrous portions are superimposed on the upper incisors, and therefore, just below the shadow

of the antrum. The exact position of the plate with reference to the nose and chin depends upon the type of face. In the average physiognomy the tip of the nose should be about one centimeter from the plate; one with prominent nose and receding chin should rest with nose on plate, or perhaps pressed deeply against the latter, while the opposite type of dish-face may require the nose lifted one or two centimeters from the plate. In the nose-chin position rays passing through the maxillary sinus first pass through the middle fossa of the skull above the petrous processes of the temporal, and below the lesser wings of the sphenoid. Projected within the shadow of the maxillary sinus, and near the nasal wall may frequently be seen the foramina, affording exit for the optic and the three divisions of the fifth nerves, especially the foramina rotunda, and ovalia lying more latterly, and being the more easily outlined in the normal sinus.

The nose-forehead position is ill suited for the maxillary sinus, as in it the petrous processes are projected across the antrum often with such density of shadow as to completely obscure the details, mislead the interpreter, and simulate a pathological condition of the sinuses. This position is perhaps the better routine method for the frontal sinus, especially if an exact outline of the upper limits of the sinus is desired, and provided that the principal rays are directed from a position sufficiently forward to bring the lesser wings of the sphenoid below the supercilliary ridge. It is not so well adapted for the outline of the orbital extensions of the frontals, and the anterior ethmoid cells as is the nose-chin position, because of the shadows of the lesser wings of the sphenoid, and the base of the anterior fossa.

Transillumination: The value of transillumination depends on the interference which the pathological contents and thickened mucosa of a diseased sinus offers to transmitted light. A perceptible interference to light is shown by uncontaminated mucus, and more by normal mucous membrane; and when the latter becomes swollen and hyperemic, and the sinus filled with mucopus and detritus, especially in chronic infection, a high degree of illumination becomes necessary for translucency. Since we are concerned with the light-interference caused by the diseased processes in the sinus cavity alone, it is highly important that the light, before entering and after passing out of, the cavity, should encounter as little interference from extraneous bone and soft tissue as possible, and to this end the essayist wishes to describe a method of transilluminating the maxillary sinus which he has used with gratifying results for eleven years, viz: "An orbito-palatobuccal route of transillumination." The advantages claimed over the palato-facial, or Heryng method are:

(1) The light passes through less extraneous (to the sinus) tissue.

(2) It passes through opposite instead of adjacent sides of the sinus, and, therefore, penetrates deeper into the cavity.

(3) It takes less time.

(4) It is more cleanly.

Author's Method: The patient is placed on a high stool in a dark room, requested to tilt the head backward, and open the mouth. The cheek is retracted with a tongue depressor so as to bring into view not only the hard palate, but that part of the floor of the antrum in the buccal cavity outside and above the molars.

The light is placed against the lower lid above the infraorbital notch, pushed inward, and pointed downward until the infraorbital is well passed, when an area of pink will be seen on that part of the roof of the mouth and buccal wall on either side of the alveolar process corresponding to the floor of the antrum.

That the extraneous tissue in this orbito-palatobuccal method are less extensive, and offer less resistance to the light than in the Heryng method is evident after comparing the thickness of the antral walls in the valuable data given by Davis in his classic monograph (2): "Nassal Accessory Sinuses." (Ann. of Rhi., Otol., & Lar., Sept., 1918), as follows: "The orbital wall is a thin plate of bone from 0.5 to 1.5 mm., and the facial from 2 to 5 mm.," or 3 to 4 times as thick as the orbital wall. Thus the light passes through only one-third as much bone, and far less soft tissue in entering the antrum through the orbit in the author's method, as it does in its exit from the antrum through the facial wall in the Heryng method. In each case the light passes through the roof of the mouth. In the new method there is the added advantage of being able to observe the translucency outside of and above the molars, as well as in the roof of the mouth; in fact the entire floor of the sinus where pathological conditions are most usually found is outlined and transilluminated.

Route of Transmitted Light Through Antrum: The popular fallacy in the palato-facial method of Heryng is the presumption that the light passes directly through the antrum. As a matter of fact, the greater part passes first through the floor of the nostril into the nasal cavity, then through the lateral nasal wall into the antrum and through the upper inner and anterior corner of the antrum, escaping entirely any localized pathological condition of the sinus lying over the roots of the teeth and outer antral wall, which is the most frequent site of pathology, especially when the infection is of dental origin. Apropos this is the following quotation from Logan Turner, "Accessory Nasal Sinuses, 1910": "With the exception of a very small portion of the outer edge of the palatal plate of the superior maxilla close to the alveolar margin the roof of the mouth forms the floor of the nose, and has no part in the formation of the floor of the antrum, this wall being formed by the alveolar process which bears the teeth. The typical floor is over the molars, and the posterior portion of the second premolar, and in all stages of development is in close relation to the teeth, there being always a bony covering over their roots." A further quotation from Turner will help to remind one how far, laterally, the inferior fosæ of the nose extend: "In an antrum of average dimensions the outer border of this latter (canine) ridge indicates externally the line of union between the facial and nasal walls of the cavity." Quoting further: "When the lamp is placed in the mouth some of the luminous rays enter the maxillary sinus directly, while the remainder pass into the nasal cavities, and thus reach the antra through their nasal walls." It is very evident, therefore, that when (as frequently happens) a septal spur or an enlarged inferior turbinate or some other abnormal condition fills the inferior fossa, transillumination by the old method is very materially interfered with, and its interpretation rendered faulty.

PEDIATRICS

THE IMPORTANCE OF LUMBAR PUNCTURE IN INTRA-CRANIAL HEMORRHAGE OF THE NEW-BORN. REPORT OF A CASE WITH RECOVERY.

Dr. J. Buren Sidbury, Wilmington, N. C.

Intra-cranial hemorrhage of the New-Born is not an uncommon occurrence. On the contrary, it is much more common than any of us know, due to difficulties in its recognition in some cases. At times it is not only very difficult of recognition but even impossible to make an absolutely certain diagnosis, antemortem. It may occur in any type of delivery. The most usual history is that following a prolonged labor, with or without instruments. It may occur, however, in the so called normal labors and not infrequently does it happen to the premature baby. Two such cases have occurred in my practice in the last three years.

This condition was first properly interpreted by Sarah McNutt (1) in 1885. It was brought more into prominence some twenty-five or thirty years later by Little. That the majority of these cases are born dead or die soon after birth we do not wonder at. However, there are a certain number who do survive. Of the total mortality under one year of age 30% is due to Congenital disease of which syphilis ranks first and this condition not far behind.

Etiology: The cause of this condition may be divided into two general heads. First, Spontaneous or hemorrhage due to a general condition as Hemorrhagic Neonatorum.

Second, and most common cause is Traumatic. Under this head the most common causes are: (1) prolonged, tedious or hard labor, with or without instruments; (2) precipitate labor with injury to the child's head; (3) injudicious use of Pituitary Extract; (4) breech extraction of the after-coming head; (5) premature babies have very fragile blood vessels which are not strong enough to undergo the amount of pressure necessary even in a normal delivery, hence their predisposition to this condition.

It is unquestionably true that a large majority of the infantile cerebral paralyses occur either in first born children or in those who have been born after prolonged, dry, hard labors. That prolonged, hard labor is a most important factor in the production of this condition, I think, goes without question. The early intelligent application of the forceps will reduce the length of labor, thereby reduce the length of time the head has to undergo this pressure. Other things being equal and the mother's condition good, is it not wiser to cut down the period of labor and not wait until the mother is exhausted and the fœtal heart is imperceptible before offering help?

Pathology: If we think for a moment how delicate the brain tissue and the capillaries of the new-born must be we wonder why more cases do not occur. The bleeding may occur any place in the cranial cavity, in the vessels of the duramater, in the piamater, in the arachnoid membranes, in the brain tissue or ventricles. It may be small and punctate or it may be diffuse and cover one or more hemispheres, forming a clot of varying size and thickenss It may even occupy a third or fourth of the cranial cavity, in which event it

will cause compression of the brain substance and back pressure of the venous circulation, and, in turn, may rupture other capillaries. If the clot covers any other area than the motor area we may get no symptoms at the beginning, but later a condition of imbecility or epilepsy may develop with no other signs. The location more than the amount is likely to give rise to symptoms. We may have quite a large hemorrhage in the so called silent area without giving symptoms at the time of bleeding. A small hemorrhage in the motor area is more apt to give rise to symptoms. Hemorrhage at the base of the brain may give rise to symptoms not unlike meningitis, due to basilar irritation.

How long the blood stays in a fluid state or how long it takes the blood to clot is not definitely known but we do know that it does not clot so readily as it does on the outside of the body. When a lumbar puncture is done on some of these cases as much as two ounces of fluid blood which clots readily in the test-tube has been obtained. When you get that much pure blood on lumbar puncture I do not think that it can with fairness be attributed to a contaminated puncture. This happened in the one case which I am reporting with recovery. In this case I obtained two ounces of pure blood on lumbar puncture one hour after the first convulsion and five days after delivery.

Mouno (3) reports a series of forty autopsies on infants dying within a few days of birth, in which he found ten cases of rupture of the tentorium and five of the falx cerebri. In all of these cases death was due to hemorrhage following the rupture, though the diagnosis was made first at the autopsy table. This emphasizes the frequency of the condition as well the infrequency of its recognition.

Green (4) reports two cases diagnosed before autopsy, one died on the third day the other on the seventh, the latter showing a negative spinal fluid. Both of these cases showed much fluid blood with small clots on the surface of the hemispheres. Each of these cases gave a history of nursing well and appearing normal for two and three days respectively at the end of which time "they refused to nurse, had a feeble cry, developed a peculiar pallor and facial edema." Neither of these cases had any of the typical signs of compression.

Thrombosis is not an infrequent finding and in some cases would seem to be the only explanation of the symptoms shown.

Symptoms: To have a new born baby nurse all right for two or three days and then refuse to nurse, become pale and listless, with intermittent periods or crying spells followed by stupor and perhaps convulsions or twitchings of one or more muscle groups should make you think of a hemorrhage and especially so if the mother had a hard or instrumental delivery. Convulsions following an instrumental delivery should make us suspect this condition always. The following are the signs to bear in mind: Convulsions or twitchings of one or more extremities, bulging fontanel (not a constant sign), nystagmus, strabismus which is more or less constant, increased reflexes which may be more marked on one side, stiff neck and a Kernig's sign may be present if the irritation is confined more to the base of the brain. The pulse is strong, full and at times slow. The respirations are irregular, they may be superficial and rapid or they may be slow and deep or may even similate Cheynes-Stokes.

While any or all of these signs may be present in any one case, there are other cases which show none of these signs as was shown by the two autopsy cases reported by Green (4). I wish to emphasize that there is no harder diagnosis in medicine to make, with certainty, than some of these cases which show none of the typical signs. Any obscure illness of the new-born which can not be satisfactorially explained any other way should make us think of hemorrhage or thrombosis, especially if there was a difficult labor. The extreme type is seen in the Spastic Diplegias.

It must be born in mind that all symptoms may be entirely absent at birth, and so far as the mother knows, the baby has been perfectly well until about eight or ten months of age the mother brings the baby to the office because she does not think the baby has been developing as a baby of his age should. He does not sit up, does not grasp objects or show the proper interest in his surrroundings. On physical examination, nothing definite is usually found and the doctor tells the mother to go home and stop worrying about the child for he will be all right or he will "out grow it." A more careful examination will probably show that this child has an increased spinal pressure of 10 to 20 mm mercury, not infrequently signs in the eyes denoting intracranial pressure as papalitis or distended and engorged veins.

There is another or older type which may come to the doctor about the age of puberty, either a few years older or few years younger, because they have "peculiar spells." He may have epileptic seizures with or without the loss of consciousness or he is unmanageable, incorrigable. These are some of the latest signs of hemorrhage of the brain in the new-born. Whether we have symptoms in early infancy depends upon first, the location, whether it is in the motor or the silent area; second, the size of the hemorrhage. I think every one will agree that there must be cases of birth hemorrhage which do not give any symptoms and which get entirely well. Dr. Freeman (5) refers to a case which had all of the signs of hemorrhage and compression for which he advised an operation. The parents refused operation and nothing was done and the child made a complete recovery. No Lumbar puncture was done. This was a fortunate outcome, which, in my mind, represents a very small percent of these cases. The risk of following this as a routine is apparent.

Diagnosis: In every case of suspected intracranial hemorrhage a Lumbar Puncture should be done. It will help in three ways. Letting off the spinal fluid will relieve the intracranial pressure and stop the convulsions. It will make the child more comfortable in every way. Secondly, it may cure the patient. Third, it will be an aid to diagnosis. If pure blood is obtained by lumbar puncture in amount more than could be explained by "contaminated puncture" or if the blood flows as freely at the end as at the beginning we are fair in assuming that there was free blood in the spinal canal. The use of the spinal mercurial manometer will enable you to tell with certainty the exact intracranial pressure. The normal intracranial pressure of an infant is 2 to 5 mm mercury. The majority of these cases will show an intracranial pressure of from five to twenty-five millimeters of mercury.

The findings in the spinal fluid are not constant. The spinal fluid may be almost pure blood, and may be as much as two ounces in quantity. There

is an admixture of spinal fluid with the blood and you may get three or more ounces in all. The spinal fluid may show no abnormalities, or it may show only a few red cells with some broken down red cells. In some cases you get an amber colored spinal fluid with hematin pigment. This I have seen in two cases.

Case report. Case 1. E. C. R., age 5 days, male, the result of the first pregnancy, birth weight 6 lbs., full term abnormal delivery. The mother had eclampsia and just before delivery had one or two convulsions. The labor was induced and took about fourteen hours. The labor was hard and tedious and was terminated by the use of forceps with difficulty. The mother's condition was so serious at the last that the life of the child was not considered, for it seemed that the mother was surely going to die. At delivery the cord was around the neck twice and it was with difficulty that that child was made to breathe. On physical examination the child was poorly nourished and weak. He had a double cephalhematoma with two or three forceps marks on the head. He had to be fed with the medicine dropper for he would not nurse. Nothing unusual happened until the fifth day after delivery when, at 3 P. M., the child had his first convulsion which was general and lasted about five minutes. The other similar convulsions occurred in the next hour. At 9 P. M. the child showed a bulging fontanel, a peculiar pallor and a double internal strabismus. His knee jerks were active and equal, and there was no Kernig's sign and no stiff neck. A lumbar puncture was done and three cubic centimeters of fluid was obtained of which two c. c. was pure blood. The spinal pressure reading was 15 mm. mercury. The baby had a very good night, had no convulsions and nursed the mother the next morning and continued to nurse her for 10 months. A lumbar puncture was repeated each day for 4 successive days at which time the fluid became clear and the pressure normal. He had an uneventful recovery and at 12 months weighed 22 pounds. His mental and physical development has been normal. He is now 20 months old and is normal in every way.

Case No. 2. O. V., aged 3 yrs. 5 mos., female, the result of the fourth pregnancy, the mother had one miscarriage at three months, two other children living and well. The child was delivered of a breech presentation with difficulty in delivering the after-coming head. Mother was in labor from Wednesday 11 A. M. till Thursday 9 P. M. Twenty-four hours after delivery the baby began having general convulsions at frequent intervals continuing for 48 hours, having probably thirty or forty convulsions in that time. For the first eight months of the baby's life she practically slept very little, cried a great deal of the time. The child never nursed, was fed modified milk with the spoon at first and when it would take the nipple at three weeks of age it was started on the bottle. The feeding history was not a rational one and may have accounted for some of the sleeplessness and crying. Physical examination showed an undernourished and underdeveloped child, color fairly good, muscles soft and flabby. The child was unable to sit or stand up, could use her legs and they were not stiff but made no effort to use them in walking. Her present weight is 20 lbs. 9 oz., her birth weight is unknown but she was an average size baby. Measurements: height 33 in., circ. of head 18⅛ in., chest 19 in., abdomen 17½ in., right calf 6 in., left calf 5¾. She cut her first tooth at 8 mos. has twenty now in good condition. She understands what is said to her but can say

Case I. E. C. R. Age 12 mos., wt. 22 lbs. A perfect baby.

only one or two syllables. Her blood count and urine were normal. Spine puncture showed 10 mm. Mercury pressure, while the fluid gave a negative wassermann and a normal cell count. The retinal veins were engorged and distended. There was no choked disc.

Case 3. N. M., male, 3 yrs., the result of the second pregnancy, the first pregnancy resulting in craniotomy of child before he could be delivered, two other living children well and healthy. All labors are hard and long, with instruments. Chief complaint is stiffness of the legs and in ability to stand alone or to walk without assistance. He was born at term, birth weight 9½ lbs., nursed his mother eight months then fed mixed diet. He sat up at 7 mos., talked at 18 mos., cut his first tooth at 8 mos., walked first at 19 mos., but never very well, and less well now than he was 6 months ago. Physical examination shows a well nourished child, good color, muscles firm with those of the lower extremity unusually firm. His knee jerks are very active and equal. Eyes pupils equal and react to light and accommodation, the disc is blurred and the veins distended and tortuous. He has a positive Kernig's sign on both legs and a very active patella reflex. His gait is that of a spastic diplegia. Measurements: height 38¾ in., circ. of head 20½ in., chest 22 in. circum. of calves and thighs equal, weight 36 lbs. Spinal pressure was 20 mm. mercury, cell count normal, wassermann negative.

Case 4. M. D., aged 7 days, girl, premature, 7 mos., result of the second pregnancy which followed eleven months after the first. The labor was normal and the baby did very well, nursed well and had a pink color and cried vigorously. On the fifth day the baby refused to nurse, had one or two slight convulsions, became quite pale and stupid, but at times would cry out. On examination the fontanel was tense, there was a double Kernig's sign, no stiffness of the neck. Lumbar puncture gave an amber fluid which registered 8 mm. mercury. On examination there were some broken down red cells and twenty red blood cells, in tact, to each cubic millimeter. The child died the following day, no autopsy obtained.

Case 5. J. L. W., aged 17 yrs., male, result of the first pregnancy, mother was in labor three days, instruments used. At end of forty-eight hours the baby began to have convulsions and three or four convulsions each day for the first month. There are three brothers and two sisters living and well. Past history, he had diarrhoea his second summer, has had jaundice twice, no other illnesses. He has always been an unmanageable child, will not work at one position more than two or three days. He has escaped from an institution for the Feeble Minded three different times. He frequently goes away from home three and four weeks at the time, sleeps in the woods and either begs food or eats barks or roots and shrubs. When asked why he does this he gives a simple grin and says because he wants to run away. On physical examination he looks like a mental defective, his eyes are dull and vacant in their expression, has a thick skin and coarse, dry hair. He is well nourished and has an unusually large nose. His temp., pulse and respirations are normal. His blood pressure is 105 systolic and 50 diastolic. His height is 67 in., weight 111 lbs. His spinal fluid gave a negative cell count and negatvie Nogouchi reaction, the wassermann on blood and spinal fluid was negative and his spinal pressure was 18mm. mercury. His optic disc was pale and retinal veins were distended and tortuous.

TREATMENT. In all cases of suspected birth hemorrhage a lumbar puncture should be done for daignostic as well as for therapeutic purposes. Repeated daily lumbar punctures until the spinal fluid is clear of blood is indicated in these cases with the use of the Spinal Mercurial Manometer to register the intracranial pressure each time. By this means you can determine whether the pressure has been reduced to normal as well as draining off as much blood as may come by this route. After having done this, if there are any focal signs, such as twitching of any group of muscles or eye signs, as pappalitis or marked venous engorgement of the retinal veins a decompression operation should be considered and a surgeon called. Though I feel that it is wiser to call a surgeon with the first symptom that he may better be able to advise as to the advisability of operation. The question of an operation is an important one and if it is going to be done should be done early, before the clot organizes, if we expect the best results. Up to 1914, only 17 decompression operations had been reported for this condition. Of this number 7 recovered, four of these were operated on by Cushing while others he operated on died.

Aspiration of the subdural space by puncture through the coronal suture at the lateral angle of the anterior fontanel has been done by Henschen (6) with good results. Giles (7) has reported one case cured by aspiration of the subdural space or, as he called it, "Decompression Cranial Puncture.

More recently Dr. William Sharpe (11) of New York has operated on a number of these cases and his results are as follows: Of twenty-seven cases treated by (11) Dr. Sharpe, "nine had a cranial operation, four had lumbar puncture drainage, while the others did not have a definite increase of the intracranial pressure—so "latent" types—and recovered life without operation or repeated spinal drainage. Five of these cases died, three following the operation. Unless the intracranial pressure is very high in these newborn cases they should be given the opportunity of recovering life and the greatest ultimate normality by repeated spinal drainage."

The advisability of an operation in these cases is a difficult one and will have to be decided on the individual merits in the case. We know that cases have recovered with only a lumbar puncture. Up to the present time four cases have been reported cured by Lumbar Puncture, Brady (8) reports three cases treated in this way with two complete recoveries. In 1916 Green (9) reported one case cured by Lumbar Puncture, and in the same year Lippman (10) reports another case.

The importance of the early recognition of this condition can not be emphasized too strongly. In the beginning, if an operation should be done, it should be done immediately if the best results are to be obtained. A Lumbar Puncture should be done on every case. It will not only relieve symptoms, but it may even cure the patient. The Spinal Mercurial Manometer will accurately determine the intra cranial pressure.

Aside from the medical aspect, it is of economic value to the State that these little fellows get a square deal at birth. The world is too full of imbeciles, idiots, spastic diplegias, paralytics, epileptics and other less defectives who are occupying our institutions as well as are in our best families, who would probably have been normal, valuable citizens had they been given a "square deal" at birth. Might Cesaerean section not be substituted

for high forceps and the length of labor not be cut down by early intelligent application of the forceps, when the mother's condition will warrant it?

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DISCUSSION OF DR. SIDBURY'S PAPER

Dr. A. S. Root, Raleigh: I think this is one of the most valuable contributions to pediatrics that we have had in a good many years. I was very glad indeed to see that Dr. William Sharp, of New York, who has done more brain surgery on children than anyone else in this country, has, in a recent article, given Dr. Sidbury credit for this method, and all of us, particularly the obstetrician and the pediatrician, should be more keenly on the lookout for the symptoms of early intra and extra-dural hemorrhages.

Another thing, too, I think a great many of these cases that come to us in later infancy with evidence of having sustained birth injury have not had a hard labor or an instrumental delivery. A good many of these birth injuries come to us with a history of having had a normal delivery. Any of these cases that show the symptoms that Dr. Sidbury has pointed out ought to have a lumbar puncture performed upon them, the diagnosis made, and the treatment carried out as suggested.

*FOCAL HEMORRHAGIC ENCEPHALITIS.

(Report of a Case with Transfusion)

Aldert Smedes Root, B. S., M. D., Raleigh, N. C.

Much has been written within the past two years upon a disease to which the various names "Encephalitis Lethargica," "Influenzal Encephalitis," "Epidemic Encephalitis," "Epidemic Somnolence," et cetera, have been applied.

None of these terms seem appropriate. In case of "Encephalitis Lethargica," as Bassoe (1) points out,—it is the patient and not the disease to which "lethargica" refers. "Influenzal Encephalitis" suggests an etiology which has not yet been proven. "Epidemic Encephalitis" and "Epidemic Somnolence" are not definitely applicable,—for the malady may not prove at all times to be epidemic in its occurrence.

Of those cases which have come to necropsy,—the pathology is constant—consisting of small hemorrhagic foci in the midbrain,—hence the term "Focal Hemorrhagic Encephalitis" seems a more correct one than any of those which have been mentioned.

The etiology of focal hemorrhagic encephalitis has not been definitely determined. Its coincident occurrence with influenza in both past and present epidemics, has led most writers upon the subject to accept a definite relationship between the two diseases,—if separate diseases they be. The general concensus of opinion is, that focal hemorrhagic encephalitis is either a form of influenza specifically affecting the brain, or that the toxins resulting from influenza produce the lesions at a time subsequent to the acute attack, or that an organism or virus different from that of influenza is the causative agent.

In the latter case, it is pointed out, many of these patients have recently suffered from influenza so that their resistence is lowered, consequently they are rendered more susceptible to the organism or virus causing encephalitis. This would explain the coincident occurrence of the two diseases.

The preliminary report of Lowe and Strauss (2) indicates that the disease is caused by a filterable organism resembling that described by Flexner and Noguchi in poliomyelitis. These they observed, when smears from the mucus membrane of the nasopharynx of fatal cases were stained with Giemsas solution. The authors were able to transmit the disease to monkeys and rabbits by innoculating them with Berkfeld filtrates of nasopharyngeal washings.

Von Wiesner (3) of Vienna, announced that he isolated a globoid diplococcus from a case of encephalitis and reproduced the disease in a monkey by innoculating the animal subdurally with nervous tissue from a fatal case.

Cleland and Campbell claim they have successfully conveyd the virus of the disease to the sheep, the calf and the horse.

McIntosh (4) of London, innoculated a monkey with material from fatal cases which died with the symptoms of focal hemorrhagic encephalitis.

Flexner and other investigators have failed to find an organism in the cerebro-spinal fluid or in the brain, nor have they obtained any definite results from innoculating monkeys with preparations of emulsified brain and cord substances from individuals dying from the disease.

Flexner (5) in the March 27th, 1920, Journal of the American Medical Association, writes as follows:

"It is still too soon to say whether or not we are now at the threshold of the clearing up, by way of animal experiment, of the etiology and mode of communication of this menacing disease, as was accomplished so recently, and also by animal experiment, in the case of poliomyelitis. It is to be sincerely hoped that we are. But at this moment, and while waiting for

the ultimate and convincing experimental results, one need entertain no doubt of the infectious and communicable nature of lethargic encephalitis.".

The pathology of focal hemorrhagic encephalitis is more or less constant. The lesions consist chiefly of perivascular hemorrhages and infiltration of the walls of small vessels with lymphocytes and plasma cells,—occurring for the most part in the midbrain,—the pons, peduncles, the basal nucleii, the aqueduct of sylvius, the floor of the fourth ventrical and the optic thalmus. Less frequently the medulla and the white substance of the spinal cord are affected. There is but little necrosis or tissue destruction

Of the cases reported by Neal (6), Tucker (7), Bassoe (8), Heiman (9), Crookshank (10) and Barker, Cross and Irwin (11), a total of 138, 86 were males and 52 females. The ages were between 3 months and 55 years.

Symptoms: Many of the cases of focal hemorrhagic encephalitis reported have not been preceded by an attack of influenza,—although a larger number have been,—an average duration of two weeks intervening between influenza and the onset of encephalitis.

The latter is manifested by a progressively increasing lethargy and asthenia,—frequently associated with cranial nerve palsies. This triad of symptoms was first observed by French and English writers. The palsies, however, are present in not more than 25% of cases. Slight fever is present —100 degrees F. to 102 degrees F., and constipation is the rule. Headache and diplopia are frequent symptoms in older children. The patella reflexes may be increased or diminished,—more frequently the latter. Rigidity of body and muscular tremors have been noted in a number of cases. Signs of menigeal irritation, however, are usually lacking. (Brudzinski's and Kernig's). Vomiting frequently occurs in the early stages. While usually gradual, the onset may be sudden, being ushered in by a convulsion. Slight optic neuritis may be present,—but not choked disk.

The most characteristic symptom is a disturbance of general consciousness. There is first noticed mental apathy and drowsiness which becomes day by day more pronounced until a state of coma is reached from which the patient can be aroused but into which he soon falls again. The immobility of features gives a peculiarly expressionless face. This comatose state may last for several days, weeks, or months, when the patient either gradually improves until entirely recovered, or recovers physically but is left mentally defective, or death takes place.

The muscles paralyzed are more frequently those enervated by branches of the 7th and 3rd cranial nerves, resulting in facial palsy or ptosis and opthalmoplegia—external or internal (positive and bulbar nucleii.) These palsies usually clear up entirely within two or three months' time,—if the patient survives.

Laboratory Findings: There is present a moderate lencocytosis. Blood cultures are negative. The cerebro-spinal fluid is clear and under slight, sometimes considerable, pressure. The cell count is, as a rule, low in cases seen late, 5 to 25, but higher in those seen at the beginning of the disease, sometimes reaching one hundred. The cells are largely mononuclears. Albumen and globulin are increased, and reduction in Fehling's is normal.

Barker, Cross and Irwin (12), attaching much importance to the examination of the cerebro-spinal fluid, make this statement: "In our experience a cell count in the cerebro-spinal fluid of from 10 to 100 small mononuclears along with a positive globulin reaction with negative Wassermann and negative bacteriological smears and cultures is, at the time of an epidemic of encephalitis, strong corroborative evidence of the existence of the disease in a patient in whom the process is for any other reason suspected to exist."

Prognosis: The mortality according to the English Government Report is about 20%, and this figure seems also to express fairly accurately the mortality in this country from the cases thus far reported.

The course of the disease is within wide limits, varying from a few days to several months. In a majority of cases, the course is protracted to 5 or 6 weeks or longer.

There is not enough data to form an opinion as to the percentage of patients who are left mentally defective. Two of Heiman's nine cases in children, whose ages fell between 4 months and 13½ years, became imbecilic. The treatment of the disease has been purely symptomatic.

The foregoing is a brief resume of the focal hemorrhagic encephalitis as described by various authors up to the present time. The chief object of this paper is to call attention to the striking result which the writer obtained by transfusing a 15 month old infant who was suffering from the disease, and for this reason the case will be reported somewhat in detail.

Baby A., female, age 15 months, was seen first August 16th, 1919. The other two children born to the parents were living and well. The mother has had no miscarriages. There was no tuberculosis in the family, nor any exposure to it. The baby had not had influenza, nor any other disorder prior to the present one. She was born at term,—labor having been normal, the birth weight being 8 pounds. She had always been well and strong up to the present illness, and had developed as the normal baby should. She sat up without support at 6 months of age, stood alone at 9 months, and said 2 or 3 words at 13 months. She had been nursed every 3 hours from birth (7 feedings), and recently had been having an ounce of whole cow's milk after each nursing.

The present illness dated back 4 weeks, at which time the baby seemed to be sleeping more than usual. No particular concern was felt over this until the somnolence increased to such a degree that at the end of a week she only aroused for her nursings and would immediately lapse into the comatose state. She had remained in this condition up to the present time. There had been little if any fever, no tremors or paralyses. She was obstinately constipated.

Physical Examination: Weight 16¾ pounds; height 30½ inches; circumference of head 18 inches; of the chest 16 inches. Color very pale and skin waxy in appearance. Muscles flabby. Patella reflexes not obtained. Anterior fontanella 2½x1¼ c.m. Eyes: negative,—no ocular paralyses. Mouth: tongue heavily coated, corners of mouth excoriated from drooling of saliva, six incisor teeth present. Ear drums: Negative. Physical examination of the throat, thorax, abdomen, liver, spleen, genitals and extremities, negative. Temperature normal. Blood: Red blood cells 2,600,000. Hb. 35%, White blood cells 5,000; Urine: Amber, acid, sp.

gr. 1010. Albumen: Faint trace. Sugar: Negative. Diacetic acid, negative. Microscopic: 5 or 6 w. b. c. per field (low power), no casts.

Lumbar puncture was performed and 3 c. c. of clear fluid removed under normal pressure. It contained two to five cells. Albumen: trace; Sugar trace by Benedict's test.

The baby was observed for two days. It was with difficulty that she could be aroused from the deep stupor. While undergoing a lumbar puncture she lay with expressionless face and closed eyes, the only evidence of pain being shown by slight twisting of the body. On account of the marked degree of anæmia, it was decided to transfuse her.

On 8-19-19, 60 c. c. of blood, obtained from the mother, in 7 c. c. of 2½% citric acid solution was introduced into the superior longitudinal sinus. This blood was previously tested against that of the infant and vice versa for hemolysis. After transfusion, the lips and fingernails became pink and she nursed vigorously an hour later.

On 8-20-19, the day following the transfusion, the red cell count was 3,000,000 Hb. 43% and white blood cells 6,500. When seen this morning she was sitting up in bed fingering toys. Her general appearance was very much better. For several hours at a time during the day she was wide awake, would grasp objects placed into her hand and make cooing sounds. Her diet was regulated and she was sent home.

On 9-1-19, twelve days later, she was seen again. She did not seem drowsy, but evinced little interest in anything. She did not follow objects or sounds. Her physical condition was distinctly improved. The mother says she is drowsy at infrequent intervals, and does not sleep much more than she did before she became ill.

On 9-13-19, twelve days later, and twenty-five days from the time of transfusion, symptoms relating to the nervous system were noted and had developed rather suddenly on the previous day:—continuous spasmodic twitching of the muscles of the left side of the face and right arm. Mouth was held open and coarse tremor of tongue present and constant drooling of saliva from corners of mouth. At frequent intervals gutteral sounds were uttered. The lower extremities were unaffected. The weight was 17 pounds 2 ounces. Red blood cells 3,000,000; Hb. 50%; white blood cells 7,000.

9-22-19, Tremors of face and arm were less marked. Dermatitis of face from constant drooling. Baby does not notice objects or sounds. Hb. 55%.

10-11-19, Weight 18 pounds. Physical and mental condition improved. Tremors less marked. She notices objects, takes watch in her hand and reaches for mother. She cannot stand alone.

10-28-19, tremors have entirely disappeared. No further mental improvement. She sits with mouth open and vacant expression. Cannot stand alone.

1-8-20, physical condition improved, appetite good, bowels regular. No tremors. No improvement in mental condition.

Summary: We have an infant 15 months of age, who, for 3 weeks, had been in a state of profound somnolence, with no evidence of improvement either physically or mentally taking place as time went on. She was trans-

fused with blood from her mother (who had not had influenza), and a striking improvement followed almost immediately, so that within a short period of time she came out of the comatose state into which she had been for so many days. Her appetite returned, she gained in weight, the blood picture rapidly improved and the obstinate constipation was overcome.

All indications at the present time point towards the child's being mentally defective. Whether or not there will be a restoration of, or improvement in, the mental faculties,—it is impossible to say. It is, however, hard to disassociate the rapid and sudden betterment in the child's physical condition from the effects of the transfusion.

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DISCUSSION OF DR. ROOT'S PAPER.

Dr. I. W. Faison, Charlotte: That is a splendid paper of Dr. Root's, and he deserves a great deal of credit for handling it as he did.

I just rise to ask one question. There is one phase of the matter into which I would like to go a little further. I would like to ask him to explain the transfusion, what he expected from it and why did he give it?

Dr. J. Buren Sidbury, Wilmington: There is one point that I noticed in a few of the cases that I have seen in the hospital. I do not

think it has any significance in regard to the therapy at all, but most of the cases have an initial onset of temperature to 102 or 103. Then the temperature comes down and stays at an absolute level. It ocmes down to 98 and stays there. The temperature is absolutely level unless some complication arises. I do not think that it has any significance, but I wish to cite it as a point that I have noted.

Dr. Root, closing the discussion: I gave the transfusion on account of the extreme degree of anemia in this case. I merely hoped to carry the child further along, until the disease ran its course. Just how the transfusion produced the marked change in the baby's condition I do not know. I did not speculate on that in my paper. It may have operated in several ways—possibly through the introduction of anti-bodies. Possibly the course of the disease was at an end, but that seems improbable on account of the sudden betterment which took place immediately after transfusing.

ACIDOSIS.

Dr. L. W. Elias, Asheville

A year ago, an intelligent, well equipped North Carolina practitioner was questioned regarding Acidosis in his part of the State. Replying he asked, "what is it?" In the belief that his case was not an isolated one, this paper was written. In further apology let it be stated that it is entirely immaterial to the writer whether Acidosis is called a disease, a symptom a symptom-complex, or what not. This is cheerfully left to individual preference. For the sake of clearness, statements will be made rather dogmatically.

Three points are considered: (1st) Attention is called to a clinical condition, the recognition of which is fairly recent. (2nd), is considered its diagnostic features, and, (3rd) is a discussion of the measures employed for relief.

Acidosis exists when acid is increased in the human system, and the base reserve is decreased.

All body fluids and tissues are kept in a slightly alkaline condition. This reaction is most carefully guarded. When the metabolism of food or the breaking down of tissue liberates acids, the alkaline stabilizers are worked constantly to prevent a disturbance of the normal alkaline reaction. The means employed are oxidation of acid products into carbon dioxide, which latter is eliminated through the lungs. Some acid is thrown out bodily through the kidneys; more is eliminated through the kidneys after first being neutralized by the body bases. These bases consist of sodium, potasium, magnesia, calcium, and amonia. The amonia on its way to form urea is diverted to neutralize acid. This is Nature's normal method of maintaining a constant alkaline reaction in the body. If acid is introduced into the body, or develops in excess, then an increased demand is made upon the bases of the body, and the body begins to lose its base reserve. If this is continued, there is of necessity a decrease of that alkalinity of the tissues, which is absolutely essential to the proper maintenance of life and body activity. An acid condition of body fluid is never reached, but as acid accumulates and base is exhausted, in attempting to neutralize the acid, a less alkaline condition is approached. This condition we speak of as Acidosis.

The manifestation of Acidosis will be considered in a moment. But first arises the question what causes this disturbance of normal function to such an extent that the body is no longer able to maintain its usual alkalinity? This is a problem yet almost wholly to be worked out. We know that with pneumonia and numerous other diseases, we may have acidosis. We know that with summer diarrhoea we frequently have it. Here, a loss of water from the body is probably one of the factors, acting by reducing kidney elimination. We may also have it in chloroform and ether anesthesia, and in a number of other conditions. The exact way in which these diseases and conditions operate to produce Acidosis is very imperfectly understood, or not understood at all.

Besides the above, we have the condition of Acidosis coming on apparently out of a clear sky, when we are absolutely unable to find any cause whatever. It is to this type that I wish to call particular attention, as it is this type which is not so well recognized, and, by some of even the best men, its very existence is denied. And yet the symptom-complex is distinct enough so that when stated those who have never noticed it before will probably recall some cases, or at any rate will observe them within the near future. For this condition is not rare, and once one has his attention called to it, he is sure to meet cases in his practice.

To illustrate this condition, take a typical case. A little two-year old, who is a well developed, carefully fed, normal child, apparently in the best of health, and with no past history bearing on the case. Suddenly he begins to vomit without rhyme or reason. He seems languid and dull, and on being disturbed is irritable. He vomits, usually only on taking food or water. Thirst is pronounced. The skin slightly flushed, and he seems to have fever, but the thermometer shows but a slight elevation, usually not above 100 or 101 degrees. There may be a few stools of fairly normal appearance. The breath has an odor suggestive of chloroform. The urine gives a strongly acid reaction to litmus. The breathing, which is one of the most important diagnostic points, is the deep "air-hunger" type rather than rapid. In the case just mentioned, this may be so slight that it is not noticed. When it is present in a pronounced degree, the patient has reached an advanced stage of acidosis, and the condition is grave indeed. A careful physical examination of ears, throat, chest, abdomen, skin, blood and urine fails to reveal anything that might suggest a cause of the trouble. And when one who has had a number of cases, finds such a condition, and careful examination reveals no cause for it, he says the patient has Acidosis. And because the outcome in any particular case is almost more uncertain than anything in medicine, the doctor is guarded in his prognosis.

The symptoms enumerated above may vary in degree. Vomiting may be excessive, or absent. The listlessness slight or amount almost to coma. The odor of the breath slight or heavy, pervading the entire room. The thirst intense or moderate, etc. But the above picture is fairly characteristic of the average case.

This condition may right itself without help, presumably because whatever produced the trouble ceases to operate, and the system has not suffered

sufficient damage to prevent readjustment of itself unaided. On the other hand, the condition may grow worse, and the dullness increasing the urine remaining persistently acid in spite of large doses of sodium bicarbonate, many times the amount which in health would render the urine alkaline. The dyspnoea becomes pronounced, and death supervenes quietly, or suddenly, with the patient apparently in a state of profound exhaustion. Death usually occurs in from twenty-four hours to four or five days.

Diagnosis: The diagnosis is made by the nausea and vomiting and thirst, with disturbed respiration of the "air-hunger" type, with listlessness, or stupor. Confirming the diagnosis is the persistently acid urine after large doses of alkali. In the light of repeated clinical experience the above conditions, without any cause which the most careful examination will reveal, justify a diagnosis of Acidosis.

The symptoms may all be so slight that one is in doubt as to whether or not he is dealing with Acidosis, and it may take careful watching to decide. However, valuable time need not be lost, since one of the important means of treatment is also a most important measure for diagnosis. This is the administration of sodium bicarbonate. In doubtful cases give one-half drachm of soda in one-half oz. of water every hour. In the average baby 30 grains will render the urine alkaline. If after two or three doses the urine still remains acid, we are justified in calling the case Acidosis.

Treatment: Once the diagnosis is made, most energetic measures should be instituted, for, as above stated, no one can say which case will resist, and which yield easily to, treatment. So we dilute the acids with water, which also assists the kidneys to eliminate acids. We further combat the acid, and at the same time restore lost base, by giving sodium bicarbonate, preferably in large doses given at short intervals; at least ¼ dram every hour. If this is given in sufficient amount, we check the condition, possibly bringing it to a standstill. The acid is being neutralized, the depleted base reserve is being replenished. But in many cases this is not sufficient, and without carbohydrate the patient will slip back into his former condition, and go progressively bad. Hence carbo-hydrate is imperative. If it must be injected into the body, it is given in the form of glucose, a 5% to 10% solution. When vomiting has subsided the starches are used. At times they act in relieving nausea.

Our treatment then, consists of *water, sodium, bicarbonate* and *carohydrate*. These are not given consecutively, but in practice they are given more or less simultaneously, either by mouth or Murphy drip or possibly by the skin, in the vein, or in the peritomeal cavity.

Large amounts of water are needed, and where vomiting is excessive and the bowels irritable, the intra-peritoneal route presents the most satisfactory way of introducing it into the body, giving 150 to 400 c. c., with or without 5% of glucose and with or without 2% of sodium bicarbonate. This is repeated in 4 to 6 hours. The veins also are used for the soda and glucose. But, except in the presence of great abdominal extension, the peritoneum should be used for the solution, since the large amounts needed, if given in the vein, would throw too great a strain upon the circulation.

Conclusions: 1. Acidosis is a condition caused by an increase of acid, and a loss of the base reserve of the system.

2. This may follow disease, or other known abnormal conditions.

3. There are cases, by no means rare, where the symptoms of Acidosis are preceded and accompanied by nothing discoverable, which might be considered as a cause.

4. The treatment consists in getting into the system large amounts of sodium bicarbonate, carbohydrates and water, in every way possible, and as quickly as possible.

Dr. A. S. Root, Raleigh: I was very much interested to note how Dr. Elias was going to differentiate between cyclic vomiting and acidosis. I have not yet found any one who has been able to discuss that to my satisfaction. I think that we are all somewhat mixed up on acidosis. Dr. Dunn, of Boston, considers cyclic vomiting, or recurrent vomiting, as a form of acidosis. Dr. Howland, of Johns Hopkins, considers a case to have acidosis where the hydrogen-ion concentration of the blood is increased and the CO tension of the aveolar air is decreased. That is the border line that he draws, but it is impossible, in a practical way, to make that distinction. Clinically, Dr. Howland considers cases that have hypnoea as cases of acidosis. These cases of recurrent vomiting always have diacetic acid in the urine, and I am not at all sure that this is an accompaniment of cyclic vomiting, or whether it is the result of starvation, because in a majority of these cases you do not find diacetic acid in the urine when the vomiting begins, but you will always find it the day afterwards.

Dr. I. W. Faison, Charlotte: This is a subject that has been forced on me during the last six months by two very close and very interesting cases. I wish to mention first what Dr. Root had to say as to cyclic vomiting. It would look as if the cause of all these conditions is the sheet anchor, or what you mean by acidosis. We know that a child can have acidosis from too frequent bowel movements, acidosis from constipation as the cause, also that it can come from any type of infection. Another cause brought out at the Southern Medical Association meeting at Asheville, which interested me much, by Dr. McGuire Newton, of Richmond, was that four cases of cyclic vomiting had a cause behind it of an organic appendix. I had one of the same type, which was operated, and so far the cyclic vomiting has not reoccurred. It is well to consider that, it is well to go into the appendix before you go by a case of cyclic vomiting. Starvation, continued vomiting, or diarrhea following these acute attacks of cyclic vomiting, the cause behind which is the lockup of an organic appendix.

Now, as to Dr. Elias' paper, which is pretty thorough, we can look back and try to make the diagnosis from the history of the first few days prior to the attack. The child is put on the train, is traveling for a day or two, his diet changed, and on the second day he has acidosis. Now, what was the cause? Taking away the carbohydrates and putting him on eggs and milk. The protein diet is the cause of the acidosis. It does come on suddenly, they do vomit, they suffer for water and air. The picture is distressing, it is awful to look at. There is no more distressing condition, to my mind, than this one of puerperal eclampsia. First we hear the patient beg for water and beg for rest. It tries a man's soul.

As to the treatment, I cannot say much, for I have only five minutes. I have had peculiar things come up in that line. I had a patient in this same

condition, awful hyperpraea and thirst. She had been treated by no less great man than Dr. Barker of Hopkins, so I asked her what Dr. Barker did for her. She told me that he gave her soda, and I did exactly what he had done. Less than twenty-four hours afterwards I ran across Dr. Barker and told him what I had been doing, that I had been giving her soda, as she said he did. He said that they had quit soda as a curative, that it would not cure acidosis. It is well enough to give it, it does not hurt. If you have a baby you have to rely on the stomach to take it. Do not get his rectum disturbed. So far as curing, it is not worth anything. The remedy is glucose, dextrose. I came in close conference with Dr. Howland in consultation over the other case. He said, "Do not give soda unless he will retain it. If he vomits do not put anything of any nature in his stomach. Put six ounces of ten per cent glucose dextrose in the rectum every six hours and wait. If that does not cure him, he will not be cured." I got a Murphy drip at once, put the catheter well up into the colon and took about one and one-half hours to give him six ounces by the drip method. The hyperpnoea began to give way, the stomach relieved, the child began to take water, and we gave him water, and after twelve hours of absolute tie-up of the kidneys he passed water. When that happened I felt absolutely sure that the child would get well, and he did get well. It is the fats especially and the proteins that produce the greater majority of these cases. There is an excess of fat or protein metabolism. The metabolism of the child was so changed that this condition was killing him. Therefore, change that and put in the sugar. For days and days this child had no fats or proteins of any description, but kept on sugar and corbohydrates. So, in the handling and treatment of acidosis, soda will hold them for a day or so, but it does not cure.

There are no authorities for me in medicine—there are consultants and advisors—they may and do change their minds.

Dr. Horace M. Barker, Lumbrton: As to the point which Dr. Faison brought out regarding the protein side of it, I have found in a number of cases that these cases that periodically have a spell of acidosis, cyclic vomiting, etc., do show in a number of cases a marked idiosyncrasy. In fact, I have one case now that has a marked idiosyncrasy to onions. By eliminating that one protein, that case has gotten on splendidly. The eliminating of the protein is one of the many factors.

Dr. J. Buren Sidbury, Wilmington, N. C.: I think that Dr. Faison's talk emphasizes the fact that until you have a specific therapy you have a multitude of therapies. The three points that Dr. Elias brings out, first, all the water the child can take by mouth; second, hypodermoclysis or intraperitoneal injection of normal saline or dextrose and soda; thirdly, soda bicarbonate to the point of neutralizing the urine. As much as two thousand c. c. of fluid in twenty-four hours should be administered if possible.

Food is of secondary importance and should be delt with accordingly. This is a condition which is going to do its work in a short while and if the child does not get any food it will be better than attempting to give food which may aggravate the condition.

Dr. Elias, closing the discussion: I am exceedingly grateful to you all for this illuminating discussion. It brings out the state of mind in which the profession is at present. There is no uniformity of opinion here, neither is

there in the mind of any individual doctor. There must be a multitude of causes. I recently lost a case that had for two weeks previously had a dram of soda every day. The mother was giving it for some little skin eruption. The child had had very careful diet, with no variation of any sort, but the soda was not worth a cent. On the other hand, there is a doctor at home who has two children who have had two attacks each, and he attributed it to eating too large an amount of crackers. There was no indigestion, but they had a marked attack of acidosis. There are dozens of other cases, and they violate every theory that you can formulate. There is no theory that is satisfactory. I have been recently up to the Surgeon General's library and to Baltimore and other places, and you can find as many theories as there are doctors. There is no uniformity as to the causes nor as to the treatment. Some say it is due to colloids, some say that is all poppycock. There is absolutely no uniformity, but one thing that I want to emphasize is that this condition must be recognized. I think it is high time that we are recognizing this thing and not waiting for the hypertony, which they say is the only diagnostic point. When a child gets to that point he is mighty sick, and there are very few chances for the average case, in my limited experience. Learn to recognize these cases before they reach that stage. Early recongition is the important thing.

I think everybody is agreed that there is a loss of bases. When that is lost we are bound to have a disturbance of the system. It is largely theoretical, but it is theoretically accurate to give something to restore this lost base, and we do get relief in some cases.

Now, as to the way of giving water, the intra-peritoneal injection is the ideal thing. You can inject it into the abdomen, giving all the way from 150 to 300 c. c. of normal salt solution. You can put glucose into it, and it can not be rejected. So give the water. If you give it into the vein you will overwhelm the circulatory system. Give it in the abdomen and it is soaked right up. Take a needle and inject it just below the navel. It is practically impossible for the intestine to puncture. You can repeat it every four to six hours, and if you observe proper asepsis you can give it with practically no danger whatever.

The discussion as to whether a person has acidosis or cyclic vomiting does not mean a thing, to my mind. It does not count for a thing. There is no way yet of deciding. But there is a clear cut condition of which babies are dying, and that is acidosis. It comes on out of a clear sky, they vomit, are restless and dull, and the babies die. There are three things today to give them—soda, which helps for a short time, water, and dextrose, and then you are doing the whole thing at once.

INFECTION OF THE NEW BORN.

Dr. Yates W. Faison, Charlotte, N. C.

Not only must the new born infant combat diseases particularly encountered at this early stage of life, but he must also fight diseases that commonly effect other children.

We usually think of the young baby as being immune to the common contagious diseases, but we know that they do occur.

Scarlet Fever has been reported in a new born infant—Diptheria is rather uncommon in young infants, but all infants are susceptible from birth except those whose mothers have immunity. Uusually infants under 2 months of age are immune to Measles, but here again it seems that only those infants are immune whose mothers have had the disease.

Measles has been reported as soon as sixteen days of age.

Whooping Cough has been reported as early as the fourth day with distinct whooping by the eighth day.

Besides these, the infant may suffer from any of the common infectious diseases—Influenza, Typhoid Fever, Pneumonia, etc.

Again we see various infectious conditions caused by the various pyogenic organisms—I will only mention ophthalmia neonatorum, tetanus, and pemphigus neonatorum, as they are usually considered separately.

In some of these infectious conditions, there is only a localized external inflammation, more often ending in abscess formation.

Omphalitis, or inflammation of the umbilicus and surrounding cellular tissues is probably the most common—Occurs any time until the umbilicus has cicatrized—Usually terminating in abscess formation.

Erysipelas may be a complication of the inflammation about the umbilicus or may start from any abrasion of the skin at any part of the body—Usually spreads widely—Generally involves only the superficial tissues, but may involve the deeper tissues and cause diffuse suppuration. The symptoms are very severe and usually terminates fatally.

Multiple superficial abscesses may occur.

Sometimes one or more of the internal organs are affected, without external manifestations. We might include in this type the umbilical arteritis and phlebitis cases.

The arteritis occurs much more frequently than the phlebitis. The umbilicus may show nothing abnormal, but on pressure pus may be expelled from the vessels. The vessels may be involved only a short distance or may reach all the way to the liver. The arteritis is complicated by the usual lesions of a pyemic infection, the phlebitis is usually accompanied by interstitial changes in liver or multiple liver abscesses. The patients usually showing jaundice.

Pneumonia is not at all uncommon in the new born. Usually of the broncho type, the processes appearing more often in the upper than in the lower lobes. The symptoms are often obscure and the physical signs indefinite. There is found at autopsy some involvent of the lungs in most of the fatal cases of pyogenic infection.

Peritonitis is a common complication of an umbilical arteritis or erysipelas in fact it is one of the most common complications of pyemic infection and very often the cause of death. It may be local or general.

Meningitis also occurs as an acute purulent process, associated with menigeal hemorrhages, acute encephalitis, and multiple abscesses in the cortex. A positive diagnosis can generally be made by lumbar puncture.

Acute suppuration of joints may occur early or late. The smaller joints are more frequently involved than the larger ones, but any joint in the body

may be attacked. The organism most often found is the gonococcus, next the streptococcus.

Pyelitis has been found in the new born.

A case was reported where the appendix was successfully removed twelve hours after birth. And finally there occurs cases of general infection, true septicemia or pyemia, associated with multiple abscesses in the viscera, joints, or cellular tissues. This is a particularly common manifestation of infection of the new born, and it is to this type that the term "Infectious Disease of the new born," is commonly applied. I will consider this condition in more detail and then report a case. Infection occurs when micro-organisms are brought to any portal of entry, which is open in a new born child whose resistance is too weak to prevent their entrance. Dunn thinks that the most important factor in the occurrence of the infection in the new born is the relatively open condition of certain portals of entry, particularly the umbilical wound. He thinks that if the low general resistance of those infants was such a big factor, infections would be relatively much more common.

The organisms may enter through abrasions of the skin or mucus membrane, the mouth, lungs, or umbilicus, the last one being by far the most common one. The stump of the cord is undergoing a necrotic disintegration thrombi are found in the umbilical veins which may easily become infected and then break down into purulent material. This material may then enter the circulation and produce a general infection. All these processes may go on without any lesion being noted at the umbilicus. The infection may take place before or after the separation of the cord.

The infection may come in rare cases from the vaginal secretions or the mother's milk. Although it has been shown that in the great proportion of cases the milk of a mother suffering from septicemia contains pyogenic organisms, still the taking of these into the stomach is not likely to infect the infant. Other sources of inocculation are unclean hands of nurse or physician, improper care of umbilicus, dirty bath water and dirty clothing.

In rare instances septic infection may be transferred directly from an infected mother to the fetus through the placental circulation.

The micro-organisms chiefly concerned in these infections are the common pyogenic bacteria, staphylococcus anreus and streptococcus. Next in importance comes the gonococcus and pneumococcus.

The clinical manifestations are many and varied. The three most common symptoms are fever, jaundice, and hemorrhages.

There is usually a sudden rise of temperature followed by an irregular septic temperature. After a period of such fever, the temperature in some cases becomes normal or even remains permanently sub-normal.

Jaundice may or may not be present. In the severe cases it is intense. It is not of the complete obstruction type, but bile is found in both urine and stools. Hemorrhages are common and may be the cause of death. They may come from the umbilicus, intestine, or any mucus membrane. Purpura is the most common hemorrhagic manifestation.

Nervous symptoms are generally present. Prostration is generally marked and extreme exhaustion may come on rapidly. These symptoms vary from restlessness or apathy to convulsions or stupor.

The pulse is rapid and weak. Diarrhea is frequent—vomiting is less common. Wasting is usually present and rapid. In addition there are symptoms and signs due to the various forms of local inflammation—localized abscesses, peritonitis, meningitis, pneumonia and erysipelas—these may be so pronounced that they obscure the more serious general infection. On physical examination the liver is usually found enlarged—the portal of entry may or may not be found—the umbilicus may or may not be inflamed, the umbilical depression may be filled with pus, or pus may be made to exude by pressure about the umbilicus.

The blood examination usually shows a marked lencocytosis. Only by a blood culture can the diagnosis of a general infection be definitely proven.

The prognosis is always bad, even in the mildest forms—and the severest types almost always die. It is probable that practically all cases, in which there is a general sepsis or any important visceral lesion, die. Only patients with localized inflammation, such as those of joints or skin, are likely to recover. A few cases of apparent umbilical infection recover, but it is probable that in these cases the septic process never become general. Death may occur within a few days or may be delayed for a longer period.

Pyogenic infection of the new born, just as puerperal fever in the mother, is preventable. This is shown by the great diminution in its occurrence since the introduction of aseptic methods into obstetric practice. In the vast majority of cases this disease is due to the carelessness of an attendant, the physician, the nurse, or the patient.— Clean clothes, clean hands and clean surroundings for the baby are essential. The umbilical wound should be treated like any clean wound—dressed with sterile dry dressings and every thing that comes in contact with the wound should be sterile.

Unfortunately our treatment is limited. Mostly symptomatic. Wherever there is localized suppuration, incision, evacuation and drainage should be done.

The childs general nutrition should receive careful attention by closely directing the details of nursing and feeding. An autogenous vaccine can be tried where it has been possible to isolate the infecting organisms—but as yet no favorable reports on its use have been made. I believe that transfusion in these cases offers us the best hope of benefit, as it has proved in puerperal sepsis in the mother. I will now report a case.

This baby was brought to me on January 28th when he was two weeks old. Father living and well except for occasional attacks of supposedly gastric ulcer. Absolutely denies buetic infection. Two older children living and well. No history of tuberculosis on either side. The mother on the second day after this child was born began a rapidly rising temperature, which turned out to be a streptococcic puerperal infection, from which she died in a few days. The delivery was normal in every respect and directed by a careful physician and nurse. The child appeared and acted in a normal manner—weighed eight and one-half pounds. Navel cared for in usual way. Was given boiled water for twenty-four hours, then put to mother's breast. After third day was put on artificial feeding (Dryco Dried Milk, I believe) because of the mother's febrile attack and lack of milk in breasts. One or two other foods were tried during the next two weeks—due to infant's "apparent inability" to digest them.

On the fifth day there appeared a swelling in the first phalanx of fourth finger of left hand. The swelling was symmetrical, reddened and tense. Attained the size of a hazel nut. Absolutely no temperature or other symptoms. The following day a like swelling appeared around and including apparently the left elbow—exactly the same characteristics and symptoms except the baby resented having the left arm moved. Cord came off on the seventh day and appeared normal. In three days both swellings began to decrease in size. The color became a dusky red, as if the tumors contained old blood. They became reduced about one-third in size and remained so up to the time I saw the baby.

Five days after the first swelling on finger was noticed, the scrotum was found to be swollen and rapidly attained the size of a large orange. On the same day a like tumor appeared over the right clavicle, about the inner third, about the size of an egg. Both swellings had the same appearance as previous ones, first tense, pinkish, œdenatous, then lessening in tenseness and becoming a dark red color and reduction of one-third to one-half original size. The baby had not yet shown a bit of fever. Temperature ranged from 98.5° to 99.5° rectal.

No other symptoms developed except the feeding had not progressed very satisfactorily. The baby had lost only about one pound since birth. I saw the baby on the fourth day after the swellings in the scrotum and over the right clavicle appeared.

He was well developed, color good, did not look as if he had lost but very little weight—weighed seven and one-half pounds—cried lustily, but took his food very slowly. Did not look like a sick baby. Head, eyes, mouth and throat negative. Heart and lungs normal. Abdomen soft. No tenderness or rigidity. No masses. Umbilicus showed no redness or induration, slightly moist masses could be expressed from umbilical vessels—liver palable about three cm. below costal border. Spleen not palable—lower extremities negative. Anus negative. Glands in groins and axilla palable. Skin clear. There was a swelling directly over the middle of the right clavicle about the size of a half lemon—slightly reddened, tense, with a very slight sense of fluctuation. It looked very similar to an angio neurotic œdena swelling.

There was a like swelling over the left elbow, spindle shaped, extending for an inch above and below. Seemed to give pain on motion. There was also a swelling over the first phalanx of fourth finger on left hand—here the color was a darkened red as if old blood was under the surface—more fluctuation than the others.

The fourth swelling was in the scrotum which was about the size of an orange of a dark red color like the finger, tense, but showing slight fluctuation. Rectal temperature 99°. Pulse 140. Respirations 30. Urine negative except for slight trace of albumen. Stools were light yellow—full of undigested food—some mucus—four to six daily. Blood—white blood count—65,000—smear showed Polynuclears 64%. Mono nuclears 36%—no normal cells.

The diagnoses suggested were Pyogenic Infection, Syphilis, Tuberculous Infection and a Hemorrhagic condition.

As three of the four swellings had occurred over or about the bones, x-rays were taken, which showed the swellings not in the bone but in the soft tis-

sues. So here we had an infant whose mother had just died with a streptococcic puerperal infection, not sick looking but fairly well nourished, with swellings appearing at intervals over different parts of the body, with none of the ordinary symptoms of a pyogenic infection as high temperature, prostration and wasting—in fact he had shown no temperature, but had a white count of 65000.

I decided to puncture these swellings and see what they contained. The swelling over the clavicle was selected and at first obtained nothing, but on pushing the needle deep in, thick, old pus was drained up into the syringe—in turn each swelling was punctured and each one contained pus. A bacteriological examination of this pus showed a pure culture of streptococci—immediately each swelling was incised, evacuated and drained—it was surprising to see the amount of pus—the tunica vaginalis on either side was filled—at least two ounces was drained from the elbow.

The baby was put on a weak cow's milk mixture to which Dextri Maltose was added in two days. It was taken well and the stools began to look more normal a once. By some misunderstanding the autogenous vaccine ordered was never completed. The second day after entrance another abscess appeared over the sixth rib, left side, anteriorly, which was immediately drained.

On this day the baby began to run its first temperature—100°-100½ rectal. The third and fourth day passed without any new development except for the fact that the baby seemed to be brighter and improving. All the wounds were draining only slightly and looked as if they were healing. The chances at this point looked bright for recovery. But on the morning of the fifth day the temperature was running between 102°-103°. The baby was restless, looked sicker. Physical examination revealed two things. A rather indistinct swelling was barely to be made out at the edge of the liver in about the nipple line—no jaundice. Also the abdomen had become a little spastic and distended and seemed tender. The symptoms became rapidly more severe. The child became prostrated—would take no nourishment—circulation collapsed requiring repeated stimulation. The abdomen became extremely distended, hard and spastic, especially over the upper portion. Temperature 104°-106°. The baby died that night. The baby had undoubtedly developed a peritonitis, with possibly a liver abscess. Autopsy was denied.

This was a pyogenic infection of the new born, probably pyemic in type. The portal of entry was obscure. At first showing only manifestations of suppuration in the cellular tissues, with one joint involved with none of the common severe symptoms, then a period of apparent convalescence after the incision of the abscesses, and finally a sudden appearance of a visceral lesion, certainly peritonitis and possibly liver abscess, with sudden death in twenty-four hours. The question of the portal entry is of some interest. No abrasion of skin or mucus membrane was ever found. Although we know that when no other point is to be found the umbilicus is probably the source whether or not there is any sign of inflammation—yet in this case it might be a question—since the infecting micro-organism was the same in both mother and baby and as her infection showed up so soon as the second day, it is not inconceivable that the bacteria was present at time of delivery and was ingested. Again, as the baby was nursed three or four days after the

sepsis started in the mother, it could be one of the rarer cases where the bacteria entered through the milk.

The course of the case was some what out of the ordinary—ordinarily it would be hard to conceive of a new born infant, with an infection of this degree and accumulation of so much pus, never running any fever except at the terminal stage. And I shall be frank to say when I first saw the baby, the explanation of the different swellings was puzzling. Again, it seems strange that the absorption, which must have undoubtedly been going on in the presence of so much pus and for at least two weeks, did not show more general symptoms—there was no primary reaction of fever and then falling to subnormal because of overwhelmed resistance.

Another point brought out by this case is, that we must keep in mind that every infection of the new born, no matter how slight or mild a degree, must be considered a serious condition. I almost made the mistake of letting the father return home on the fourth day after I saw the baby; yet in twenty-four hours the baby was practically dead from a complicating visceral lesion. Always give a guarded opinion. And finally I wish to enter a plea for more careful and closer watching of the new born baby. We see it too often that the physician considers his duty done when he has seen the delivery through, tied the cord, and turned it over to some attendant to be bathed and clothed. He almost forgets the little stranger unless someone calls his attention to something that they consider abnormal. The baby should be watched as carefully as the mother, yet usually she receives most of his attention. He should give detailed instructions as to the care and nursing, and then follow up and see that these instructions are carried out.

Dr. L. W. Elias, Asheville: This is a very interesting paper, and brings up a good many things to think about I wonder if the doctor thinks that opening up those abscesses had anything to do with the rapid increase in temperature. I wonder if he thinks an aspiration would have had any less effect.

Certainly, the doctor's suggestion in regard to the care of the baby should be most heartily commended.

Dr. Yates W. Faison, closing the discussion: That question was considered, and the surgeon overruled us and decided to open up freely and drain. It was considered. The point has been brought up in discussion about this case before that probably opening these abscesses and letting them drain gave the child resistance enough to cause the temperature. It did not go down and then come up again.

SIMPLIFIED INFANT FEEDING AND THE BREAST
A RATIONAL FEEDING PROGRAM FOR THE FIRST YEAR OF LIFE

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Infant feeding, whether simplified or complicated, as a subject for discussion before a Pediatric Section, is something to be approached with caution.

The changes have been rung upon it so often and in so many different keys, that one feels like treading lightly and asking for a special dispensation for discussing it. And yet I think that no one will deny that Infant Feeding needs simplifying, if there is any subject within the whole broad scope of modern Medicine that does. There are perhaps a number of reasons for this. First, Pediatrics, along with a number of other subjects in the medical curriculum that are of greater age as recognized specialists, is considered a minor in our medical schools, and is crowded out of the students' time and interest by other supposedly more important subjects. And yet Pediatrics is the only branch of the whole array that deals with the well organisms and the only specialty that must be practiced by every general practitioner. Secondly; As a result of this comparison of a large and important subject into such small compass, the professor and instructors are inclined to emphasize the striking cases, of a sort less commonly encountered, rather than to dwell upon those far commoner and hence (to them) less interesting problems of everyday occurrences, and especially those concerned with infant feeding.

Thirdly: The subject of Infant Feeding itself is one that has given rise to most acrimonious debate, due to honest divergence of opinion on the part of widely differing schools of thought.

Fourthly: This difference of opinion as to what constitutes a satisfactory system for the feeding of infants has been able to persist as it has, because of the relatively wide limits of tolerance possessed by different infants, and by the same infant at different times, for the most widely differing articles of diet. We have each of us but to consult his very recent memory, in order to recall some perfect specimen of babyhood, that has arrived at this condition on feeding that we would have said must surely have led to speedy marasmus—explicable on no other grounds than those of the tremendously wide limits of food tolerance possessed by some babies.

Fifthly: The fact that such widely differing schools of thought could each of them point to a highly satisfying and successful series of cases, has led each group to believe that it had fairly well solved the problem of infant feeding. It has also caused each group to doubt the possibility of attaining the equally successful series of cases claimed by the proponents of some entirely different set of principles. All have perhaps failed to put proper emphasis upon the fact that a great body of babies, fed according to any old methods or to no methods at all, were worrying along perhaps almost as well as some of these special series had been doing. They had been studying especially the sick baby, with his greatly narrowed limits of food tolerance due to the food injury that he had sustained; and had failed to attempt to formulate, from the experiences of this large mass of carelessly fed but fairly healthy, well babies, a simple method that could be readily taught the average student, graduate or undergraduate, and by him passed on to the average mother or nurse. In other words, the student has been taught a complicated method of feeding, desirable enough perhaps in special cases of food injury, but by no means essential for the great mass of well babies. Accordingly, he has been well-nigh helpless, in the face of the demand of his mother's instructions for the feeding of their well children, because he has never been taught a simple system which simple folk, with a well baby, will take the time and trouble to follow out.

The result of this lack of a definite routine procedure for use in the case of the average well child, such as can readily be taught to and learned by the average medical student, and by him translated into simple instructions for the average mother or nurse to carry out from day to day, can be seen all about us. We know that many otherwise able and conscientious physicians never attempt to interfere in the management of the well babies of their families. They regularly allow some elderly female of the species to prove herself more deadly than the medical male, by using her experiences of a generation ago to decide proportions, dilutions, quantities, and feeding intervals,—after first using her superior judgment for instructing the young mother when to take her baby off the breast. Others, when appealed to, turn with a sigh of relief, to the proprietary foods, which never fail to promise most flattering results,—and every so often, let us be frank enough to admit, achieve them. Many babies, we know, with the broad limits of tolerance that we have spoken of, survive this catch-as-catch-can process. Many more succumb, to swell the frightful mortality figures that we have come to feel are unavoidable with artificially fed infants.

While granting that we must individualize, even with our well babies, just as we individualize with our typhoids or with our appendectomies, it must be that we can standardize and teach infant feeding, just as we standardize and teach typhoid therapy and surgical technique. It seems not too much to ask that the outlining of general principles should precede rules for specialization to meet individual conditions.

I have been brought to believe, from a brief survey of my own brief experience, that a large proportion of the cases that are referred, or drift, to the man doing pediatrics exclusively, whether in private practice or in hospital work, are feeding cases that could have been handled perfectly well by the family physician. He has failed, from the lack of a definite technique to apply, in his infant feeding cases, similar to the routine procedures which he is wont to apply in other situations. In other words, the pediatrist is achieving much of his reputation as the result of his successes with easy feeding cases, instead of being compelled as he should be to tax his best skill and ingenuity over the difficult ones alone. If this be true, then there is a serious flaw somewhere in the program of medical education today. For the future welfare of the race is in the hands, not of the pediatrist, who, in the very nature of the case, sees comparatively few of the whole infant population; but of the family doctor, who, sooner or later, sees the vast majority of them at least once in their lives. But it is to the pediatrist that the family practitioner, when in the embryo stage represented by the medical student, looks for his instruction in this most important matter. If we fail him (and my memory of the instruction given me during my undergraduate years leads me to think that we *are* failing him), can we blame him when he allows that more plausible teacher, the detail man from the proprietary food concern, to usurp the seat in the teaching chair that has been so inadequately filled? And yet, hand in hand with this admitted unfamilarity with the intricacies of infant feeding, on the part of the great majority of the medical profession, goes a most amazing readiness to wean babies for the most trivial and inadequate of reasons. When one has struggled as desperately as every man in this section has done, many a time and oft, over the artificial ailmentation of a puzzling case, one is simply awe-struck at the sang-

froid with which babies are taken off the breast, every day, for acuses so trifling as to be laughable, were not the results apt to be so serious and even tragic. "The baby doesn't get enough milk." "I never have been able to nurse my babies." "My milk is blue and watery—I know it doesn't nourish the baby." "My baby didn't gain this week." "My milk poisons the baby" or any one of a dozen other such statements, that should mean nothing more radical than an inquiry by the physician into the state of nursing affairs, and some simple adjustment or explanation, ushers in the change from nature's feeding, which works so well that no one needs to understand it, to bottle-feeding, which is admittedly but the poorest of substitutes, and is but wretchedly understood by the best. As often as not it is the grandmother, the aunt, or the nurse, who blithely crosses this Rubicon, with never a qualm over future hazards, and never a regret over bridges burned behind. One can hardly imagine a shipwrecked sailor's pushing away his life-preserver, or a mountain climbers tossing away his hobnailed boots; and yet either of these would be taking a far less serious risk than is thus imposed upon the infant whose breast alimentation is thus discontinued for these absolutely inadequate and avoidable reasons.

The first step that I would urge in the simplifying of Infant Feeding, then, would consist in keeping *every* baby on the breast. I grant you at once that such a dictum as this, solemnly enunciated without further amplification, would constitute an insult to your intelligence, and an admission of my ignorance of the state of medical knowledge today. I should not have the effrontery to urge upon any body of physicians,—much less upon a group of men engaged as you are wholly with the problems of infancy and childhood,—the already universally acknowledged superiority of breast feeding over the best of artificial feeding. This has been so generally conceded, and the literature has been piled so high with reports, experiences, statistics, and conclusions, to this effect, that it would be a waste of time to try to find anyone who would oppose what has come to be considered almost an axiom of pediatrics practice. What I do want to stress today, however, is the disparity existing between our theory and our practice, in this regard. What I *do* want to plead for today, is the realization, first upon the part of the individual practitioner and through him upon the individual mother, that what both know and concede to be true in the great mass of cases, is in all probability true in the individual case that they are considering, and whose weaning they are proposing. No one ever claims that bottle feeding *in the abstract* is better than breast feeding. It is only when we urge a mother to keep her own baby on the breast, even at the expense of some pains and effort on her part and ours, that we meet with any opposition to the continuance of breast feeding. And we certainly *do* meet with it; then, as everyone of you will, I know testify with me.

I personally am firmly convinced of what is by no means universally conceded or recognized,—namely, that practically every mother can succeed in nursing her own child. I say "practically" advisedly, in the face of the testimony of the textbooks, which are fond of citing cases of congenital or acquired intolerance on the part of certain infants toward its mother's milk. I am willing to go a step farther, and concede that probably each man here can call to mind one or more cases in his own experience in which every effort to keep a baby on its mother's milk failed ignominiously. And yet, to

strike a quick percentage, what tiny fraction of a percent is represented in the practice of any one who recalls such a case or two of so called toxicity as compared with the total number of babies he has seen. We have all of us heard or read of the existence of two-headed calves; and yet we do not ordinarily construct our stanchions so as to accommodate these rare freaks of nature.

Mind, I do not claim that every mother, or anywhere near every mother, can carry her baby through the nine months that we set aside for lactation, without help. But I do say that, given a realization on the part of the mother and of her medical attendant of the truth *in her particular case* of what both recognize to be true in the vast majority of cases,—and every man who wishes it can reduce his panel of exclusively bottle-fed babies almost to the irreducible minimum supplied by motherless babies, and babies that have been weaned three or four weeks before he sees them. And, if we are to credit the results of Moore, of Portland, Oregon, as set forth in his fascinating paper in the Archives of Pediatrics for December of last year, even this minimum may prove not to be an irreducible one, after all, for he records one case of re-establishment of breast feeding after 8 weeks of weaning, and another after 11.

Granted, then, that mother and physician are in accord and resolved to do their best to keep the baby on the breast. What can we do to help them? In view of the universally admitted superiority of breast feeding, it is rather surprising that we can find so little, relatively speaking, of real practical help, in the text-books or in the literature, to aid us in this task. The task is a two-fold one; first, the maintenance of lactation, and secondly, the adjustment of the milk to the baby or of the baby to the milk. In comparison with the volumes and reams devoted to the intricacies of artificial feeding, the space given to the problems connected with the far commoner class of breast feeding, seems almost negligible. I want to outline the regimen that has been found most successful here, emphasizing with it details which are perhaps the most important feature in the management. In a word, this consists in the inauguration of what is variously known as auxiliary, complementary, or supplementary feeding.

By whatever name we call it, let it be distinctly understood that what is meant is offering the baby a bottle, with a formula appropriate to its age, weight, and general condition, *after every breast feeding,* and letting him take as much or as little of it as he will. What is *not* meant is alternate breast and bottle feeding; for reasons that will be dealt with in a moment. He may be kept anywhere from five to thirty (or in rare instances more) minutes on the breast; until he shows, in short, by his restlessness and the tossing about of his head, that he has about exhausted the possibilities of the one breast. He is then allowed to swing over to the bottle, previously heated and in readiness, and permitted to take as much as he will of the complementary feeding. It is probably well within the bounds of truth to say, (grandmothers to the contrary nothwithstanding) that a reasonably well baby never overeats, if given a food of the proper strength. "Colic," so-called, from this cause, can far more often than is realized, be proved to be nothing but hunger, by allowing the child to take even more of the food than he has already taken. Even that infallible argument, "Why, doctor, I *know* it's colic; he just draws his little legs up on his stomach when he

cries," will fail of effect, when the mother sees the "colicky" baby fall asleep just as soon as he is allowed to be the judge of his own capacity. In other words we are quite safe in allowing the baby in this way to tell us how much too little breast milk he is getting.

The following ideas should gradually be inculcated in the mind of the mother. It is especially useful, in this connection, to give a small slip or folder, preferably typed or printed in simple language, embodying these points:

1. That she should get away from the baby at least once in the twenty-four hours,—for the sake of both individuals.

2. That she should get enough sleep; eight hours representing a minimum rather than a maximum.

3. That worry is a great milk reducer. If the doctor can keep up the baby's weight and satisfy his appetite with complementary feeding, and give the mother confident assurance of ultimate success he can generally obviate the untoward influence of worry.

4. That she may eat whatever she pleases, within ordinary bounds of reason, provided it does not cause indigestion on her part. The baby will not be affected by what she eats.

5. That excessive amounts of milk, cocoa, beer, or even water, do not necessarily, or even usually, aid in improving either the quality or the quantity of milk produced. That such excesses, on the contrary, usually in the end do harm, by spoiling the good appetite so necessary to lactation, if not actually upsetting the digestion.

6. That, in general terms, the same regimen that produces health and strength and bodily well-being, produces milk.

7. That no special diet can greatly modify the chemical constituents of the milk. The best opinion today is emphatically agreed on this. Further, some authorities believe that quantity alone can be altered,—that the quality is, in an overwhelming majority of cases, always good.

8. That a laboratory test of the character of the milk is never of any practical use. The only test that is worth while is the practical test as to its effect on the baby. If he is hungry, or is failing to gain, he should have complementary feedings until the breast supply becomes adequate, as shown by these two criteria.

9. That the milk never disappears suddenly, beyond recall,—say within twenty-four or forty-eight hours. Such an apparent vanishing of lactation is always evanescent, if complementary feeding is instituted promptly. The temporary diminution of the milk secretion can in this way always be made up for, the baby be tided over, and an enforced weaning be done away with.

10. That the care of the nipples is a most important phase of the periods of later gestation and lactation. It should begin a month or two before the birth of the baby, in the case of a mother who has depressed nipples. Gentle manipulation for a few minutes daily will make these easy for the baby to manage. Cleanliness, hardening by the application of one-half strength alcohol, and protection by the employment of inch-square bits of sterile waxed paper, are important aids in keeping the nipples fit. Bismuth and caster oil, equal parts, may be used for incipient cracking. Many women

find that their nipples will not stand the wear and tear incident to nursing a child on both breasts at each feeding. Nursing on alternate breasts is usually advisable. However, as early milk is thin and watery, as compared with later milk, which is richer, or strippings, which are very high in fat, we may if we wish diminish the fat content of what we are offering the baby by allowing him a shorter period at each of the two breasts at one feeding. As he fails thus to empty the breasts completely, however, we must be on the lookout, in such cases, for a reduction in the milk supply.

11. That we know of but two galactagogues. One is the stimulation of the infant suckling at the nipple. The other is the *complete* emptying of the breast at each nursing. These can be temporarily stimulated; the first, by the breast pump and nipple massage, the second, by the breast pump and manual stripping of the breast, preferably after the manner described by Moore of Portland in the December Archives of Pediatrics. But the best agency of all is the one that combines the two,— namely, the nursing baby.

12. That milk is like the manna that the Lord provided for the children of Israel,—it cannot be stored up in the breast nor saved there for future use. A thorough understanding of this act will do away with that bane of the doctor who is trying to improve a breast supply,—namely, the alternate feeding of breast and bottle, (supplementary feeding proper). This is very frequently indulged in on the mistaken supposition on the part of the mother or her friends that there is not enough milk for all the feedings, and that in this way it can be eked out. Lacteal glands, like muscle tissue, work the better the more they are called upon to perform, within physiological limits. The surest way in which to dry up a breast supply, is thus to skip several feedings a day.

There seems to be no reasonable doubt that a moderate amount of breast milk does "take the curse off" the bottle feeding. Whether it be a question of carrying over antibodies from the mother to the baby, or whether it be a question of vitamines, or whatever the cause may be, we know that the child on complementary feedings shares much of the good fortune of the entirely breast fed infant. Then too, after weeks, or perhaps even months, the breast may begin to function to such an extent as to render further artificial feeding unnecessary, either temporarily or until weaning time. Such a solution as this, of a feeding problem, never offers itself unasked, in the case of the entirely bottle fed baby!

A fair degree of familiarity on the part of the attending physician with some comparatively simple form of infant feeding procedure to employ for his complementary feeding, is of course, necessary. Surely, however, this is not too much to ask of any man who is dealing as extensively with women and children, as is the general practitioner.

And so, back we come, or around we come, after all, to the favorite topic of pediatricians, Infant Feeding. The practitioners (and they are not few) who refuse to admit that there is such a speciality as pediatrics, taunt us with the gibe that every pediatric meeting, whatever its announced topic, either starts out or ends up with a fuse over infant feeding. If a personal experience is allowable, I must confess that after some years in hospital and clinic work with children, it was still with fear and trembling that I approached an ordinary feeding case; and it was still a good deal a matter of

chance what feeding mixture such a new case would receive at my hands. I felt convinced that the old, complicated methods on which pediatrically speaking, I had been brought up, were somehow wrong; and yet I did not know what was right. My feeling of dissatisfaction with the old stuff may perhaps best be expressed by an illustration from life. If the operation of a trolley car were such a delicate, complicated matter that no one but an Edison could compass it; and you needed fifty trolley cars to handle the traffic of your city; then you will agree with me that the trolley car, as a means of handling your traction needs, would fail as a working, practical proposition. For there are not available Edisons enough to go round. Similarly, if it takes a Holt, a Morse, or a Kerley, to feed your baby and mine, Mrs. Jones's and Mrs Brown's, then infant feeding, as taught today in the east at least, is a failure. But we know that it is by no means as rare an occurrence as we could wish, to have a mother bring back to us, after two or three months' absence, a big fat baby that we have failed to make gain on the most scientific formulæ, with the triumphant remark, "Oh, Doctor, see what Blank's Food did for my baby." Not pleasant, is it? Nor yet, as sometimes has happened to the best of us, to have Grandma's mixtures preferred by an ungrateful child to our elaborate formulæ. Such occurrences compel serious consideration.

Some time ago my attention was called to what was to me an interesting attempt to join in the holy bonds of matrimony two systems hitherto considered hopelessly unmarriageable,—namely, the percentage and the caloric ideas of infant feeding. I believe that Dennett, in his book Infant Feeding and even more in the teaching in his Seminary at the New York Post Graduate Hospital, has done more than anyone else in the east to popularize this union in a workable technique. In every marriage, each party to the contract contributes elements that the other lacks, to make up a complete unit. In this marriage of the percentage with the caloric,—of the east with the west, —of the Bostonese with Chicagoese, if you can conceive of such a union between such incompatibles—we shall rely upon the so called percentage method to tell us *what* to give the baby; and upon the so called caloric theory, or method, to tell us *how much* to give. But, in order to fulfill the requirements that we set for ourselves in naming this investigation, we must produce something that is really simplified,—it must be, not a head-splitting arithmetical jumble of proteins, carbohydrates, fats, and calories, but a simple, straightforward rule-of-thumb working system,—simple enough to be workable for him who runs to read and to apply.

The part in our scheme that the percentage method is to play, then is to determine how best to make our mixture digestible,—a matter that the caloric method, so called, never attempted to help us with. This simple point Chapin, for instance, absolutely disregards, in his diatribes against calories, in which he attempts to reduce the whole idea to the ridiculous by suggesting that we furnish the necessary calories to the youngest in the form of coal oil.

Without getting ourselves into the usual arithmetical tangle by comparing the percentages of the three food elements in human milk and in cows milk, let us recognize that there are three elements, any one of which may under certain conditions give us trouble in adapting the milk of the cow to the

stomach of the human,—namely, fat, sugar, and protein; disregarding the salts, about which we know as yet so painfully little. Let us dispose of the danger due to the fat, by reducing it to a very low amount,—which will be the case if we dilute ordinary cow's milk with twice as much water; i. e., give one-third milk and two-thirds water. This same process will reduce the harmful potentialities of the sugar to an even greater degree by reducing it so far that we shall have later actually to add some sugar to our mixture in order to have enough to approximate it to the human norm. The protein can be disposed of even more simply,—by subjecting the diluted milk to a boiling process for three minutes, which completely breaks up the curd when acted upon by the stomach juices, as has been conclusively demonstrated by Brenneman of Chicago in his classic work on boiling milk. That the protein of the milk is "the cause of many of the nutritional disorders encountered in infancy" is categorically denied by Grulee, of Chicago, in his "Infant Feeding," (page 167 sec. —.) He is sure that the so called "case in curds" are irritant only mechanically; and that this source of trouble is eliminated by boiling. The only possible objection to this; that it may cause scurvy in time, is done away with absolutely by the feeding of orange juice.

If, then, we agree to start any child that comes to us on a mixture of one part cow's milk and two parts water, boiled together for three minutes, with no sugar added, we shall at least be giving a mixture that can do him no harm. For our fat is diluted far below that in human milk, our sugar is almost absent, and our casein, the protein constituent, has been rendered harmless by boiling, so that it will form a finely divided curd when it meets with the digestive juices of the infant's stomach. Any possible ill effect of the boiled milk we shall eliminate by feeding him a little orange juice once or twice a day. But this, if we start with 10 ounces of milk and 20 of water, will probably be insufficient. We can prove this by multiplying 10, the number of ounces of milk by 20, the number of calories in an ounce of milk, —the water, of course, having no caloric value. That is, our initial formula which we agree is digestible, is worth 200 digestible calories, if you will. While it is much better, by all odds, to give too little of a digestible food than to give any amount of an indigestible one, still we must eventually come up to his digestive requirements, best measured in calories, if we are to look for a gain. But how are we to ascertain what this caloric need is? By multiplying the number of pounds the baby weighs, say 10 pounds, by 50, which is an average calculation of the requirements of the average child per pound per day, we shall arrive at the number of calories that we must eventually give our baby in assimilable form, if we are to get him to thrive and gain weight; in this case, 500. Starting, then, with our trial or initial formula of 10 ounces milk and 20 ounces water, we may gradually strengthen this until we have brought it up to the number of calories (in this case, 500) that we have determined upon as a normal daily feeding for our baby, eventually. Our strengthening must be in terms of two factors only, however; namely, milk (with its 20 calories to the ounce) and sugar, (with its 30 calories to the level tablespoonful). 5 level tablespoonfuls, or 150 calories, may be taken more or less arbitrarily as the total sugar content at which to aim. It is probably better borne in the form of dextri-maltose than in that of either cane sugar or milk sugar. In order to decide how many ounces of milk we shall eventually want to give our baby, we may subtract

150, the number of calories to be contributed by our five level tablespoonfuls of sugar, from the total number of calories previously determined upon (by multiplying the number of pounds the baby weighs, by 50, his daily requirement per pound.) This total, divided by 20, (the number of calories in each ounce of milk), gives the amount of milk needed.

This leaves us nothing to determine, but the amount of water to be used in the final total feeding. In order to do this, we shall simply have to determine the total bulk to be given the baby in the course of the day, which will be the number of bottles to be given, times the number of ounces in each bottle, determined by any rule that you have been using in the past. A general average might be represented by 7 feedings (which gives bottles enough for a feeding every three hours during the day, and one night feeding) times 3, 4, 5, 6, or 7, the number of ounces per bottle, according to the age of the child. This bulk must be furnished by the water plus the milk, as the sugar goes into solution. As the number of ounces of milk required has previously been determined, we need only add water to bring up the total to the total bulk desired.

Now we need not, nay must not, aspire to reach this desired haven of the optimum number of calories at a bound. Grant that our baby may, and probably will, be hungry, long before we have advanced him from the—10 oz. milk—20 oz. water—on which we started him, to the optimum formula that we have decided he must ultimately reach. But we are, all of us, committed to the principle of making haste slowly, in feeding babies; and at least we do away with the formerly commonly accepted 24-hour starvation period. The hungry baby worries the mother with his crying; but the child that worries the doctor is the baby that has no appetite.

Leaving all theory aside, the practice is this. Start virtually every baby on a mixture of 10 ounces milk and 20 ounces water, boiled together for three minutes, with no sugar added. The caloric value of this is 10x20, or 200. Experience will tell you when it is safe and advisable either to give a stronger mixture or a greater bulk at the start, for this trial formula, as we may call it. With this weak strength and small amount, the preliminary starvation period that we used all to insist upon has been found quite unnecessary and hence a loss of valuable time, in most straight feeding cases. Add an ounce of milk a day. The caloric value increases thus 20 a day. Add a level tablespoonful of sugar (preferably in the form of a malt sugar), every few days, in place of the increase in the milk, computing the value of the food on those days by adding thirty calories for each level tablespoonful of sugar added, instead of the twenty that would have been added by the addition of an ounce of milk. 5 level tablespoons make a good average quantity. In order to determine whether water should be increased, left as it is, or decreased, we must know how much bulk we want our baby to have in the twenty-four hours. This is easily arrived at, by multiplying the number of feedings (say 6 or 7) by the number of ounces he is to get at each feeding (which averages an ounce per month,—more in the early months, of course, and less in the later.) The difference between this total, and the number of ounces of milk, will represent the amount of water needed.—as the sugar, of course, dissolves, and so occupies no bulk. Before long, add the juice of half an orange to each day's dietary.

The question of the best interval at which to feed is a point which is variously settled by different schools. My own custom has been largely the result of the method described by the homely phrase "cut and try." The two-hour interval I use only in the case of prematures; and the two-and-a-half, only as a step or half-way step in the course of changing from the two-hour interval on which a baby may be when he comes in, to the three-hour interval at which I always prefer to start. As soon as the baby is doing perfectly well on this,—by which we understand that he is being fed at 6 a. m., 9 a.m., 1 a.m. and 3, 6 and 10 p.m.,and once during the night,—and seems satisfied to wait from one feeding to another, and occasionally sleeps till well along toward morning, I advise the mother to dispense with the night feeding, by giving first water when the baby wakes and cries and then omitting both nursing and water. This is the routine for babies that are not seen at birth; those cases that are, do not have any night feeding at all, being given warm water at two o'clock a. m. or later if they wake, which they soon cease to do. As early as the end of the first month, I suggest to the mother that she will probably find it easier for both the baby and herself if she can change over to the four-hour interval. If the idea appeals to her, I have her allow the baby to go as long as he will from feeding to feeding,—three and a half hours if he will not go four,—for about a week. Before the end of that time, a well-fed baby is usually established on the four-hour schedule. The same free and easy method is used at three or four months, if the baby is satisfied and the mother cares to try, with regard to omitting the 10 p. m. feeding. These changes are so much easier for the mother, and involve so much less handling of the baby, that they are usually easy to persuade the mother to try for. It is hardly worth insisting upon, however, and especially is contra-indicated if the baby is hungry, and ready for the bottle at the end of the three hour interval. The baby's own hungry inclinations can here be safely relied on and show us his needs if we will study him carefully.

A most valuable adjunct to employ at times in the management of difficult cases is that much talked of agent, dry milk. Like most other proprietary preparations, it has its very definite dangers in its likelihood to become a very intolerant master, as soon as it gains in the minds of the laity the place that we are apt carelessly to help it to attain. In the child who has suffered a "food injury," it is often a most valuable aid, with the lowered fat content that at least one brand offers, and the apparently increased adaptability conferred by the heating process. Especially if one had reason to doubt either the intelligence or the zeal of the one who is to prepare the complementary food, is this an efficient and valuable ally. If caloric value is given as 16 calories to the level tablespoonful (leveled, that is, with a knife).

A word as to the management of prematures, in order to cover the various phases of the feeding of the first year of life. It is coming more and more to be realized that it is a waste of time,—nay, of human life,—even to attempt the feeding of the premature infant with anything other than human breast milk, either whole or diluted. Strengths and intervals may well be left to the individual feeding the individual case. I am firmly persuaded that the obtaining of the tiny amount of breast milk needed for the first days and weeks of the life of the premature, is by no means the difficult or impossible matter that we are apt, offhand, to consider it. That community

must be a tiny one, indeed, in which there is at any one time but one nursing baby. And it should be most rare, indeed, to fail to find a mother who, if the need were fully and carefully explained to her, would be glad to spare for the starving baby of her neighbor the few drops necessary to save its life, from the bounteous table that nature has set for her own more fortunate child. In the larger community it is easier; in the hospital, comparatively simple. Cooperation between the obstetricians and the pediatricians has in more than one instance resulted in the establishment of some central agency, at which the parents of the infants whose need for human milk is urgent, can be put in touch with the mother who is willing to supply, on a financial basis, a stated amount of breast milk per day. A more interesting bit of hospital wire pulling has been the feeding of the premature, by means of a pipette or Breck feeder, on a diluted breast milk expressed from a mother in the maternity ward, while the supply of its own mother was started by placing to her breast a needy baby from the pediatric ward, who greatly benefits by the operation, until the premature can get his supply direct by nursing at his own mother's breast.

Weaning is a procedure which entails no suffering on the part either of mother or of child, since the brutal old custom of abrupt weaning was done away with. At about the sixth month, or thereabout, the mother is told to precede each breast feeding with a tablespoonful or two of a cereal. As soon thereafter as one wishes, the vegetables may be added, one by one, as baked potato with milk, spinach, carrots, mashed peas and beans. As these additional articles are judiciously used to expand the baby's dietary, he will naturally become less and less dependent upon the breast milk, which, toward the end of the nursing period, he will be using more as a drink than as a sole dependence for nourishment. Milk, either diluted, and without sugar, or straight, may be added as desired. In this way, the change from breast feeding to general diet is made so gradually as to be almost imperceptible. It is only fair, in this connection, to mention the paper in which Morse, of Boston, sums up very fairly his objections to this procedure, and his reasons for adhering more strictly to the older custom of introducing these articles of diet considerably later. The change can be made quite as gradually from the four hour feeding intervals to the more conventional hours of meal times. The 6 o'clock feeding becomes a 7 o'clock breakfast with cereal (without sugar), milk, orange juice, and bread. The 10 o'clock feeding becomes the pre-nap lunch of crackers and milk. The two o'clock feeding is easily recognized in the after-nap dinner, with the addition of baked potato and milk, one other vegetabl, bread or toast or zwieback, and a simple pudding. The six o'clock feeding is less deeply camouflaged, appearing as supper, with Graham or Wheatsworth crackers and milk, and stewed fruit. The omission of eggs in any form, and of the elaborately prepared beef broth or scraped beef, is intentional. The value of the former is more than problematical; the labor spent on the latter is out of all proportion to its value, which has undoubtedly been greatly exaggerated.

SUMMARY

Infant Feeding, as taught until yesterday in the schools, needs simplifying and needs it acutely.

2. The first step in simplifying, and the most important for the welfare

of the race tomorrow, is the maintenance of breast feeding, partial or complete, in the vast majority of our babies.

3. Such a statement alone is inadequate. Proof of the assertion, as well as help to the mother in accomplishing it, are needed. This consists in the "adjustment," as I like to call it, of the breast to the baby, or the baby to the breast.

4. I have attempted to show how any man may keep that wonderful ally, old Gradma Nature, on his side,—and in many cases, take all the credit while he allows her to do most or all of the work.

5. To do this, requires a reasonable familiarity with some reasonably simple form of Infant Feeding procedure, for use in connection with the breast feeding, at some time during the period of lactation. I have tried to formulate the simplest that I have yet found.

6. A useful servant, but one that must be watched lest he assume the mastership, is some form of dry milk.

7. The successful care of any respectable proportion of prematures presupposes the employment of breast milk in all cases.

8. Breast milk is not the rare thing we like to consider it,—we can get it for the premature, if we go after it hard enough.

9. Weaning is a gradual affair,—as such it may be accomplished absolutely without disagreeable effect upon either mother or child, if it be begun early enough.

10. References.

Ladies and Gentlemen, I have tried to give you my articles of faith with regard to the management of the feeding of the ordinary baby—or one that approximates the ordinary. (For no mother will ever admit that her baby could be classed as ordinary, by the dullest imagination). Endless variations from the average may be made, to suit the individual baby, and to increase its flexibility in the hands of the individual infant feeder. A necessary part of the technique, in actual practice, that I have not attempted to bring out, consists in the rendering of frequent reports and the maintaining of constant touch between mother and doctor. This is absolutely essential, for checking up results, to see if directions are being carried out, and to detect and correct errors arising from a misunderstanding of directions. (In my own case, this is covered by the morning telephone consultation hour, at which time mothers are encouraged to telephone in reports and questions, with absolute freedom.)

Some such skeleton technique, flexibly and humanly applied, that may easily be taught to any man who has to deal with babies, will carry perhaps 95% of our babies safely through the first, or critical year of life. If this is true, and I believe that a large number of men might easily be found whose experience will confirm it, we may reasonably leave the remaining 5% or less to be discussed in some more highly technical treatise than I have attempted here.

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SIMPLIFIED INFANT FEEDING.

Dr. Frank Howard Richardson, Brooklyn, N. Y.

EXHIBIT NO. 40.

Dr. J. R. Ashe: We have all enjoyed this very instructive paper of Dr. Richardson's. I find that a great many mothers who are feeding infants need help. Most of these mothers, if we do supplement their feeding they are perfectly able to nurse a baby for several months.

I find so many babies four and five months old, whose mother's milk is just beginning to fail, you can't make it take the bottle. She does get a little in its mouth by the spoon. I have had so many to act that way. I have made it a rule to try to start the babies out on bottles when two or three months old, whether they need it or not.

Dr. B. L. Smith: My only rule in feeding babies is the time. Laying aside the quantity etc., the only rule I insist, if a child takes his food at six in the morning I want him to take it at 6 the next morning, etc. The most important part of feeding is fixing the food to suit the baby. I have been using in the past two years the dried milk as supplementary food to the breast. I found that the most easily prepared—one advantage it has over the condensed milk is that the child will not wean itself from the breast on account of the sweetness of the milk. I do not feed it as a food, except as supplementary food, or in emergency cases.

Dr. Richardson's paper was hard to discuss, but you can bring out a few things. I always give the bottle after the breast. I found that if you put the babies on water that that is sufficient to keep them up with the bottle, and they will at anytime adopt the bottle of milk in place of the breast, that is if you have them acquainted with the bottle.

L. T. Royster, Norfolk, Va.: I have very little to say. I have never taken a baby off of mother's breast because the milk did not agree with it. I have not seen a case like that yet. Anyone that attempts to take babies off of the breast because it has colic, had better stick to the ills we have and not

rush to others. I have never taken a baby off of mother's breast and I see no reason for it at all. The use of the terms complementary and supplementary are rather confusing, some use supplementary as adding to the mother's feeding. I always use supplementary, if I can possibly do so feeling that one dram of mother's milk at each nursing is far better than no dram.

The other principle is, if we alternate the feeding, the mother's milk will dry up very quickly. The breast pump is the last thing on earth to use. The nurse can be taught to nurse the mothers, as well as the milkman to milk the cow. I never use a breast pump if I can avoid it. The mothers can nurse the milk out of their breast if taught by the nurses. A baby suddenly weaned from a mother's breast by the death or illness of the mother, if it is a healthy baby it should present practically no difficult in feeding. We must know what takes place in the stomach or intestines. I was fortunate enough to study in New York, and in those days we had to figure down to the minutest percentage. That day has passed. Now we realize that any of those foods may cause indigestion. I will say that that is very frequently the case—fats and sugar—whether mixed with milk or not and where the rules are laid down by the manufacturer—unfortunately too many of us let the manufacturer be our teachers. Personally I never used any of the dry preparations. I do use mixture of Dextrine and Maltrose, but it is too laxative, and therefore we have not gotten to that point. If we start any child that is healthy on milk formula, disregard its weight for ten days or two weeks to be sure we have not any symptoms of indigestion. I have never used a dram of condensed milk in my whole 25 years experience, nor have I ever used dry milk except in traveling. However we can obviate the imperfect supply by the boiling process, and by giving orange juice.

The question I do want to speak on is the question of premature baby. He is talking on the stand-point of well equipped muscles and I agree with him. Unfortunately in my experience, I am ashamed to say that I have not the experience in Hospital feeding I would like to have. A great many of these cases occur in private homes on the outside of town. Perhaps three times out of five in my premature work, I am unable to get breast milk, therefore we have to resort to something else. I don't know how many of you saw an article I wrote in Medical Clinics about two years ago. I have found a valuable aid—you have to be with people that are not as intelligent as you would like to have them. I have raised some of my babies on whey, and when they have gotten whole whey instead of skimmed whey, when a child digests that you can slip off to a simple formula of whole whey. I use that exclusively in my practice. I think, there are times when you have got to eliminate the feeding. The vast majority of babies can be fed successfully on home milk. When you have regulated the fat and sugar and increased them both gradually then you have almost always prevented your difficult feeding cases.

Dr. G. S. Mitchenor, Edenton, N. C.: I was mighty glad to hear Dr. Royster say he had never taken a baby away from the mother's breast. In Eastern Carolina I find quite often where the mother has taken a baby away from her breast saying she did not think her milk agreed. The mid-wife and the mother are responsible. I have recently had some very embarassing experiences and went into a home—the mother was giving this infant—

five months old syrup of quinine. The child had not been born when we passed our last malaria. Some women in the neighborhood told her about it. We have got to educate our mid-wives because they have it in for us.

I agree with the doctor that a dram of milk, 60 drops is better than none at all, but if we have a mother who cannot give the child the necessary amount is it better that we let the child get as much milk on the three or four feedings and supplement that with cow milk, or would it be better to let that child have only one or two feedings a day?

Dr. Faison. Take away infant feeding. We would nearly have to go out of business. I am of the opinion that this treatment ought to begin before the baby is born. Get this woman in a condition to take care of her baby—to have her nipples treated.

Another thing I want to say, and I hope these nurses will tell the others what I say about it—that is you nurses are with a woman in confinement and with her a month, if that woman don't give a plenty of milk within 30 days you are a mighty sorry nurse, and so sorry that you ought to be kept out of the profession. God didn't put that breast on a woman to lie around and do nothing. With the proper massage and proper treatment she will give the sufficient amount of milk. If you take care of that breast and that nipple dampened with boracic acid and keep that nipple thoroughly wet and if the woman is well the breast will give the milk. If you don't do it it is your fault, and I want you to feel that responsibility.

You ought not to let your patient have sore nipples and if you don't have sore nipples you ought not to have a sore breast. The doctor that has a patient with sore breasts ought to quit the business. The doctor is there during the child's birth and hands the baby over to the nurse and it is good-bye. All of these things which Dr. Richardson said I agree with. A baby should have at least an ounce of good milk for every pound he weighs. With that view he will sure gain. A woman does not bring babies into this world for the purpose of being troubled with them—they don't want to do that, if so they would turn it over to the doctor and put it in the hands of the nurse saying, "I am not going to nurse it." Such a woman as that is not fit to be called a mother. The trouble now is to get the women to have the babies. Rich society women have something else to do, they don't want to go through nine months and have a baby. The poor people say they are too poor, they can't have babies. If you take the poor people out of the country with their birth-rate, how long will it be before we would not have any people? Our birth-rate in North Carolina stands higher than any other State in the Union. I was at a house three times in my life when a baby was born and when the 13th baby was born I began to feel sorry for the fellow. I says "why don't you quit it?" He says "Doctor I am poor and that is the only thing that comes to me on credit."

I am going to ask Dr. Richardson a question on supplementary feeding—if that baby don't get but a dram it is worth more than all the medicine. The supplementary feeding should be given after the nursing. The Pepsin and stuff is not worth all the salt in the water. I have in my lifetime disagreed with Dr. Moore and Dr. Royster both of them, put it down that all of the mother's milk will agree with the children, but I have never been able to get away from the fact that it did hurt. I have come to the con-

clusion in the years of experience that Faglestein and his crowd brought the best news in the world when they state that protien did not hurt. When you have a child that fat and sugar hurt you have your protein that you can go on and make him go on or live on. It is hard sometimes to get the babies to nurse, the mother's get discouraged. When they do that, I beg them to get a nurse and let the mother leave home and I tell the nurse, "If you don't get that baby to eat in three or four days I will have you discharged." These nurses are great institutions, outside of the hospital they are hardly worth a cent to us today. It will take four hours on the 'phone to get a nurse as long as they can get around the hospital and talk about the boys and dress and primp up, they will not go in the private homes. You nurses ought to go on a strike and act like humanitarians—we need you and we need the babies.

I agree with Dr. Richardson when the babies are crying with colic, they are crying because they don't get enough to eat. I had a baby in the hospital that I operated on and he was crying, I said, "What is the matter?" She said, "he had the colic." I said, "Bring me that four ounces of food I had fixed up for him." I gave it to him and he went to sleep immediately. Let them hollow and cry, they will grow by that. I agree entirely with Dr. Royster on the pump business, I think that is bad. If you get the milk out of the breast it will secrete, it has to come out, that is really the only way that will make a breast well. If that baby don't take it out it ought to be gotten out. If that mother will take her breast in her hand and press it, it will come out. We all agree that mother's milk is the ideal milk for a baby. I am glad to hear these men sit down on dry milk, it don't do for me. It is a commercial failure—everybody in town you ask them what they are doing, and they say, "I don't know anything about it." We have too good a milk here to send to New York, Europe, Asia and Africa and buy milk in tin cans that is dry. I have seen the condensed milk do some good, but with the proper bathing and proper treatment and a mother that is willing to keep her mind quiet, and play the piano and sing will give milk and plenty of it.

Dr. Richardson, closing discussion: I want to thank Dr. Royster for that suggestion of his about the extra bottle. I have mothers to ask me about that, they say it says to give the baby one bottle a day. A mother rolls over all during the night and nurses her baby—she should not do that, as she has to have the rest. If you want a mother to have a chance, ask her to let the baby go 4 or 4½ hours a day. That youngster does need the extra bottle, in order to get him used to using it. I think the best way would be to give the bottle just before nursing when he is hungry—but never give it in place of the breast.

Dr. Smith pointed out the importance of being punctual. I think this is fine, especially in the beginning. It makes a mother get up in the morning. I don't believe you can take care of a baby if you are going to sleep all the morning. I realized that, after I had some of my own, that taking care of babies was some work. One of them is getting up early in the morning. I don't insist on waking the baby up at tick of the clock, but most of the babies will wake up pretty close to the time. I don't do the alarm clock talking that I used to, but I think the baby will get along about as well.

I want to thank Dr. Smith for bringing out the point that I didn't bring out—I never give the bottle before the breast, if you do that baby will not do much toward nursing the breast. I tried to dodge the question of complementary and supplementary. The alternate feeding is a curse to the mother. As soon as she starts to alternate feeding, her milk is going to dry up. I must confess that I don't know a great deal about bringing up babies in small communities. I would like to ask you if anyone of you will try in the next year in your own community and see if you can't get some woman with a nursing baby, to give a mother of a premature baby a little bit of her milk after her baby is through. Explain to her that the whole medical profession thinks that that would be the means of saving Mrs. Jones' baby.

DR. FAISON: They do that here in Charlotte, and are glad to do it.

DR. RICHARDSON: That could be done if we use what personality the Lord has given us. I used to want to look old—I have found that the older people don't look down upon us because of our youth. They believe what you say if you will say it firmly. I am confident that the mothers are nursing babies now more just because the doctors are urging it.

So often it is hard for me to get mothers to believe they have enough of breast milk. I always ask them to let me see their breast and they take it and push it and no milk comes. Dr. Moore describes a method that any mother could learn.

First, your implements are ball and thumb and ball of first finger; with these grasp the breast way back—he says as though you were going to pinch, come down aim at it—don't come anywhere getting together. The third movement is pull down. You will get a stream of milk from the breast, when the breast pump will only bring a little. You will try two or three times, the mother will scream out because it hurts if you do it quickly, but you must try it slowly—it is one of the best demonstrations I know of to show a mother that she has milk. I thought you folks down here were so up to date that you would not have much use for extra feeding. I have a man in my ward, who is my Senior, he said, "If four or five percent of my babies don't do well on breast feeding I take them off." That man passed through the stage of thinking he could not feed babies artificially, but now he can do that, but he has not learned to carry over from the mother's breast whatever there is in breast milk to make the best baby in after life. the best standard individually. If that is true that woman is way back of grandmother who sticks to breast feeding. I think if we will let old grandma nature do the trick for us, because she will if we keep the baby on complementary feeding.

CHAIRMAN: I want to express to Dr. Richardson the thanks of this section for bringing us his message. Your paper has been most cordially accepted and we appreciate it.

LARYNGEAL STENOSIS

L. T. ROYSTER, M. D., NORFOLK, VA.

Laryngeal stenosis is one of the most tragic situations known to medicine; its relief by intubation is as satisfactory as it is dramatic. There are a number of causes of difficult or obstructed breathing, resembling, to the casual

observer, very closely the clinical picture of laryngeal stenosis, and from which this condition must often be differentiated. Those most frequently encountered are: post or retro-pharyngeal abscess, peritonsillar abscess, foreign body in the larynx or trachea and edema of the glottis. The diagnosis from retro-pharyngeal abscess is especially important, since in the latter condition the separation of the jaws by the mouth gag is often followed by immediate death.

This paper will deal entirely with membranous croup or laryngeal diphtheria, and its treatment by means of the intubation tube. There are four conditions which may call for intubation:

1. Catarrhal or spasmodic croup;
2. Influenzal croup;
3. Membranous croup or laryngeal diphtheria;
4. Edema of the glottis.

1. *Catarrhal or spasmodic croup* usually comes on at night, most often near midnight; is usually accompanied by a high-pitched, ringing, harsh metallic cough. It comes on suddenly as a rule and ends as abruptly as it appears, with the approach of day. It has a tendency to recur for three successive nights, but during the day is generally unnoticeable. There are some children who are "subject" to this form of croup, having it with every slight cold or with any sudden variation in weather, or after over-eating, in which instance it takes the place of digestive up-set. Unfortunately, catarrhal croup does not invariably clear up during the day, but may persist and produce a continued hoarseness and stenosis, which is so severe as to require intubation. I have never seen an instance of this, but it is said by many excellent observers to occur. The nearest approach to it which has come to my attention, was in a case of measles. This child required the closest attention for about ten days, during which it was thought, from hour to hour, that an intubation might be required. During the past winter this child developed influenza during the convalescence from chickenpox. She again developed a severe stenosis.

2. *Influenzal Croup.* This condition, though observed many years ago, has come into prominence during the recent epidemic of influenza, particularly through the writings of Lynah, of New York. He mentions several types, which it is not necessary to describe here. These cases occur during an attack of influenza, and develop quite suddenly. If intubation is needed, it is needed very early in the course of the croup. They are frequently intermittent and are very spasmodic. They may be so severe one minute as to almost call for immediatae intubation, while the next minute the patient may be resting quite comfortably. Some of these cases, however, pursue the usual course of laryngeal diphtheria, and gradually increase in severity, but in a much shorter time than in diphtheretic croup, and finally require intubation.

There is only one method of diagnosis, and that is by means of the laryngo-tracheoscope. This cannot well be used except in a hospital especially equipped; and as far as treatment is concerned, matters little beyond the necessity for the exhibition of the antitoxin. I am quite sure that one or more of my cases of the past winter was of this type, though I have no

way of proving it. One of these cases developed quite suddenly about midnight in a child which had had a severe cold for several days. By ten o'clock the next morning it needed intubation. This child died of bilateral pneumonia at 10 P. M. the same night.

3. *Laryngeal diphtheria.* There are two forms of this condition, primary and secondary.

Primary laryngeal diphtheria is, as its name implies, of primary laryngeal origin; that is, not following or secondary to a faucial infection. There is no visible membrane, and a positive culture is rarely obtainable, because of the difficulty of getting into the larynx with an applicator. This diagnosis, therefore, must rest entirely on the symptomatology and clinical course of the disease. This form comes on gradually, irrespective of the time of day or night; the child is only slightly hoarse at first, but this hoarseness gradually increases in severity in the course of one to three or four days until labored respiration sets in with marked retraction of supra-sternal and epigastric space, as well as the intercostal spaces. Finally, marked cyanosis occurs, which gives way to an ashy appearance which immediately precedes death from suffocation. This is the course of untreated cases. This type is rarely as septic as the faucial or the mixed cases. The reason for this is that the larynx is poorly supplied with lymphatics. We should never be fooled by the absence of faucial membrane, and should never wait for a positive culture, when dealing with this type.

Secondary cases are those which follow or are secondary to a faucial infection, or are concurrent with such an infection. They are apt to be very septic, and require most energetic treatment in order to save them.

4. *Edema of the glottis* may develop in the course of any disease, especially, acute nephritis, or arachitii bronchitis (Jackson), or from food idiosyncrasy, such as egg albumin. This edema may be severe enough to require intubation.

Incidence of laryngeal diphtheria. In this vicinity (Norfolk, Va.), as a rule the largest number of cases occur from January 1st to April 1st, and the number of cases is rarely in proportion to the number of cases of diphtheria in the community at the time. This year the conditions have changed, and I had performed ten intubations before Christmas (four since). During twenty years of private practice I have averaged about ten each winter. By far the larger number of cases occur among the poorer people, but a fair number occur among the well-to-do.

Responsibility. In a large number of cases the parents rarely think the child has anything more than a severe cold for several days, a physician often being called when the child is breathing with great difficulty and is quite cyanosed. But this is by no means always the case. Physicians themselves have a large share in the responsibility in death from membranous croup. More cases have come to my attention in which the physician failed to recognize the condition than those in which he was called too late. Physicians are not careful enough in treating sore throats. It is absolutely essential to take a culture of every throat which shows a patch, regardless of its size or location, and not say that a child has a tonsillitis merely from inspection. In almost every case of secondary laryngeal diphtheria which has come to me for treatment, the physician has assumed that he was deal-

ing with a tonsillitis, without ever having taken a culture. As for the primary laryngeal cases, there is only one absolutely safe rule to follow; every case of croup which comes on during the day, and every case which comes on at night, and which does not clear up during the day, should have antitoxin. If this rule were followed, intubation would rarely be performed.

Age of occurrence. The vast majority of cases of membranous croup come on between the first and fourth years; occasionally, however, one sees a nursing infant which has to be intubated. My youngest case occurred during the past winter, when I intubated a 2-months' old nursing infant, which was well advanced in labored breathing, having been stenosed for three days. This infant coughed up strips of membrane, which, however, showed no diphtheria bacilli on culture. The child did poorly all through the tube period (6 days) and died of pneumonia eight hours after extubation.

Indication for operation. By far the larger number of cases which come to the operator for intubation come late in the course of the disease —many of them so late that it is with difficulty they are saved at all. A number are not saved because of needless delay in intubating. When the supra-sternal and epigastric spaces are retracting, showing that the child is laboring for breath, and bringing into play the accessory muscles of respiration, and the pulse is becoming rapid, intubation should be performed without delay. When the intercostal spaces are retracting with inspiration the child is in imminent danger, and when there is a cyanosis the case is desperate indeed. The danger in these cases is rarely from the septic condition, but rather from the strain that labored respiration puts on a heart whose muscle fibers are already affected by a disease which has a special predilection for this particular muscle. The longer the stenosis lasts without relief, the more rapid and thready the pulse becomes, and the more hazardous the convalescent period, with consequent death in many cases after the stenosis has been relieved by a tube.

It is far better to intubate early—even unnecessarily—than to wait too long. Extubation, as a rule, is performed on the fifth or sixth day. Not infrequently the tube must be replaced within a half hour, while occasionally it is expelled by coughing at about the right time without needing reintubation.

The operation. When urgently needed, the more expeditiously the intubation is done, the better for the child, since, while introducing the tube, there is necessarily a short period during which all air is shut off. Perfect success in this operation can only be obtained by one with considerable experience. I was much amused when asked once by a physician if I did not think it was better to do a tracheotomy than to make eight or ten attempts at an intubation. The reply was, that any one who had to make so many efforts was not sufficiently skilled to attempt it at all. As a rule, from the time the gag is placed in the mouth to the time the tube is in place, the obturator withdrawn, and the gag removed, should require about ten seconds. Rarely should it be necessary to make a second attempt.

Dr. Joseph O'Dwyer, the inventor of the tube, always required his

students to intubate one hundred times on the cadaver before attempting the operation on a living child.

Extubation is far more difficult than intubation. It is particularly difficult when it must be done to relieve a stopped tube. When removing tube at expiration of the needed time of its stay, we may take our time and be deliberate.

The instrument. There is only one type of tube, introducer and extubator which is perfectly adapted to this work, and that is the O'Dwyer type, made only by George Ermold in New York. There have been many imitations, but there is only one genuine. In the selection of a tube it is essential to choose the right size; not so small that it will be easily coughed up, and not so large that it will over-stretch the larynx, and thereby cause irreparable injury. This error may also result in the child's having to wear a tube for a long period, if not indefinitely.

The care of cases. No class of case holds the operator on duty more closely than do intubation cases. He must never be so far away that he cannot be reached within a few minutes. These cases are essentially hospital cases, and require the service of a nurse especially trained. Now that the city of Norfolk has a Contagious Hospital, with proper facilities for handling intubation work, I require all such cases to be transferred to the hospital, although I must say that I have done some of my best work in this line, not only in the private homes of the poorer classes, with and without a nurse, but even many miles in the country, where I saw the patient only at the time of intubation. In one of these cases the tube was coughed up in an accommodating manner four or five days later, I eventually receiving it by mail.

Dr. Ruff: In connection with this paper I want to mention a condition he did not touch on a new disease. Dr. Jackson, at the American Medical Association called attention to what he called Peanut Bronchitis, due to getting a portion of the peanut kernels in the lung, which caused an intense irritation to the bronchi and lungs. That was the first time it was described. He said he had had many cases of it. At that meeting one of the biggest men in London was present—a Nose and Throat Specialist—and he had never heard of this condition, but Dr. Jackson has had many of these cases. Unless that peanut kernel is removed the patient is going to die. I sent a case to Dr. Jackson and he removed it, and the child got well.

Dr. Daniels, Goldsboro: I was very much interested in that paper. I have been practicing Ear, Nose and Throat about seven years, but the fourth year of my work it fell to my lot to do intubation. It was something I knew nothing about doing. I had to make several attempts to introduce the tube. The Doctor said you should introduce 100 on the dead body before you undertake it on living persons. Last year I read a paper on that. I described three ways of doing it. One way was direct method—second method was one described by O'Dwyer, and I described one of my own. I claim in that last method that any man does not have to have experience to use it, it is not hard on the child, it is easy on the doctor—it is one that any general practitioner can do—any specialist or anyone else. I will describe this method to you: I wrap my

patient from neck down, lay him on a table about the height of that one, perfectly straight, head level, you have to have two good assistants, one to hold the head, and one to hold the body. I don't use the mouth gag, like that—I use the one that pulls from the front and lower teeth; I use a headlight, lighted by pocket battery. You can carry that with you at any time. I use a thin corrugated tongue depresser, one that will not slip on the tongue. It is made out of pressed steel, very simple and absolutely perfect. You open the child's mouth, put this tongue depresser on its tongue, as far back as you can push its tongue down, pull it at the same time towards the child's teeth, at that time you will notice that the epyglotis comes in view. The minute this is on a horizontal plane or dropping backwards, stick the tube directly in it, then you release your tube with the introducer. I personally drop my tongue depresser and run my finger in the mouth to be sure that I don't pull it out with my introducer. The first time I failed on that. I tried it time and time again. You don't turn the child blue in the face by choking him. You should have a mop to get the mucuous out. I don't mind doing that now, but I did. If I could have gotten them off on my competitors three years ago they would have gotten them. The child is not exhausted when you get through.

My instrument takes too much force for me to engage my tube, consequently I don't know how I have it engaged. I put a stout string on that tube—some say the child will chew the string in two, but they very seldom do that. I use a stout silk string.

Dr. Hart, Lumberton: I didn't get to hear all of this interesting paper, but am convinced from what I heard that the method is very complicated. I don't know anything about this direct method, but I think the method that is commonly used is the most practical method. I don't believe it is necessary for me to try on a dead person 100 times to learn to use this method. Some of them tried it on probably less than 25 dead bodies. I had opportunity before the year was out to see five or six of these cases, which leads me to the belief that this is pretty common in rural sections. During that year we intubated six children; three of them were colored. It is said that two of them coughed up these tubes and died after that. It is certainly harder to extubate than it is to intubate. You have to use a small size, because I have seen a child eight years old that you could not possibly put a tube in over three or four years' size; but I do believe if the average practicing physician knew more about it that he could save at least 50 to 75 per cent of these children, whereas death is claiming 100 per cent without the tube.

Dr. Elias: I enjoyed Dr. Royster's paper very much. I belong to the class of doctors that would not make a good intubator. I would like to ask Dr. Royster if one was not able to intubate in the presence of the child who needed relief at once, what would he do? I also want to commend what he said about giving antitoxine without waiting for the diagnosis.

Now that the State is furnishing antitoxine for 25 cents for all that you need, there is no excuse for not having it. The other point is that so many wait too long.

Dr. Fassett, Durham, N. C.: I have been using a method of intubation which I found very simple. When I get ready to operate, I put the child

in an angle of 30 degrees, with head raised a little. I use a little brush below the larnyx, pressed up and back. The tube is pressed in the larnyx and it is picked out. I don't know what the objection could be to using that method; it is very simple and can be easily done.

Chairman: I agree with the doctors that it is better to be safe than sorry. It is perfectly possible for us to know beforehand whether the child needs that treatment or not. You should know whether that case is going to have croup next week or month; whether he has———————— if he is going to have that, it will be criminal to give him antitoxine.

I wish to thank Dr. Royster for coming before this society.

Dr. Royster: I have had one case that did not have to be intubated. Dr. Elias asked me if a child needed relief, what must we do. Intubate it immediately, even if no one is at home. I don't think eight, ten or twelve attempts should ever be allowed. I flatter myself that I can do intubation with as little trouble on the child as anyone. I don't know anything about the direct method the doctor speaks of, but I can't see any advantage in it whatever. I dont know how long it takes him to do it. No expert intubator ever makes a child blue from using his finger, and when he does it is time for him not to do intubation. We all see a child break out with cold sweat—that is more often reaction from the relief that the child is getting from struggling so long. There should be in every community an expert intubator, and if there is not one in the community the rest of you doctors ought to get together and send a man off to take a course and learn it. I have seen wonderful work in direct intubation. Winter before last I had one child that came in with laryngeal Diphtheria and Pneumonia—she coughed up that tube 21 times. I know two nights in the snow and sleet I went back and got that tube. That child can't live outside of the hospital because she can't retain her tube. I do say this, that there should be at least one expert intubator in every community, then the rest of you can put yourselves to sleep about the loss of a child by this membraneous croup. He is practically the only man who is called on for this class of work. For twenty years up to the past winter I think I got $600 out of all my intubation.

Paper By Dr. D. L. Smith, Saluda.

As I have under my care each summer, at my private Sanitarium and at the Better Babies Camp at Saluda, N. C., about 200 cases of diseases of infants, the majority of which have been treated by other physicians, previous to admittance, for various troubles, it is interesting to note the difference as to the variety and uses of the various laxatives and purgatives given to them.

In reviewing the literature on this subject, I also find the same difference as to the therapeutic value and use of these drugs.

The conviction has grown upon me that the clinical course of a great many disorders of infants is protracted by the excessive use of drugs and especially the injudicious giving of calomel and castor oil.

It is a very common history to find a child begin with some innocent upset and has been given a course of calomel in repeated doses followed by castor oil, then by other various drugs, which produces a severe intesti-

nal irritation with mucous stools containing blood; with a loss of appetite and a marked loss in weight. These children improve rapidly upon the withdrawal of the drugs and institution of a rational diet.

Indeed, I think the greatest calamity to many infants, I have seen in the past two years, suffering with influenza, and in addition, the so-called eliminative treatment, which consists in giving repeated small doses of calomel and increasingly large doses of castor oil. Influenza, particularly in the last epidemic was purely a naso-phyarangeal infection, and nothing can be gained by the use of these drugs, which I think eliminates many of these infants.

Calomel and castor oil tend to lessen the appetite and upset the digestion, and as an undisturbed appetite and good digestion are the most essential things in combating any disease in infants the use of these drugs is absolutely irrational.

In diarrhœal cases there is a positive contra-indication for either calomel or castor oil. For both, as I will show later, have the physiological effect of an irritant, and as diarrhoea is characterized by an irritation of the mucous of the intestinal tract, it is self-evident there is no indication for a laxative, but first and foremost, for the rest of the bowels and second a bland and unirritating diet, which is easily digested and lessens the chances of fermentation and putrifaction.

I have visited the various clinics of every authority on pediatrics in America in the past few years, many of them being authors of our best sellers, which are used as text books in our colleges, and in the hands of our practitioners. It is a singular fact, that these authors recommend and thereby encourage the use of these two drugs, but never use them themselves. Their students who are fortunate enough to come in personal contact with their work are taught differently, but those less fortunate that use their works as a guide receive a faulty conception of their meaning, and inadvertently use them and feel that it is right, because these authors recommend them. I will later quote some of these authorities with comments.

Another fact that I have observed in my rounds of the various hospitals, is this striking difference. If the hospital has a separate department of children with pedriatrician in charge, these drugs are absent. If it happens that the children are under the same head as the adult patients, calomel and castor oil form the shock troop division in the drug armamentarium.

Castor oil, chemically, consists of a combination of glycerine, fatty acids and ricinoleic acid. This combination goes through the stomach unchanged, but in the presence of bile and pancreatic juices it is broken up into glycerine and cineloic acid. The cineloic acid combines with sodium and forms sodium-rincinoleate, which has marked irritating properties.—Morse and Talbot. All stools contain mucus after a dose of castor oil. Clinically, castor oil has been used for every known disease an infant is due to have. It is rather exceptional to see a baby sick that has not already had the initial dose before the doctor arrives, as it has been so freely prescribed by physicians in the past.

I have seen many cases of colic in babies a few days old, the cause of which I could ascribe to no other reason than the dose of oil someone had

given. Castor oil is constipating in its effect. Still, in his recent book on diseases of children, says that he knows of no drug which is responsible for more chronic constipation in infancy than castor oil. Hare says the disadvantage of castor oil lies in its taste, the fact that it is oily, that it tends to produce hemorrhoids if used constantly, and finally that its frequent use, or even a single dose is generally followed by more obstinate constipation, than existed before, so that the dose must be rapidly increased in size to be effective. My personal observation of pre-school age, as well as school children, suffering with constipation, and the various accompanying symptoms, were directly attributable to the innocent doses of castor oil.

In the Journal A. M. M., in The Use and Abuse of Purgatives: "It is one of the few purgatives that can be given in spite of nausea and vomiting. At times it stays in the stomach when nothing else will. On the other hand, the ease with which this subtle poison can be given invites its abuse, especially in children. As soon as the calomel enters the intestines it is attacked by the alkaline pancreatic and intestinal juices, which decompose it into mercury and yellow mercuric oxide. The latter dissolves slowly and incompletely in the alkaline intestinal fluid. The small quantity of mercuric ions thus liberated excites peristalsis and at the same time inhibits the absorption of fluids. These effects are so much greater in the small intestines than in the colon that calomel is unreliable as a cathartic. The abnormal amount of fluid in the large intestine may be completely reabsorbed, giving rise to diuresis instead of catharsis unless its reabsorption is inhibited by a saline purgative."

Chondunsny, of Vienna, in his study of calomel, found fourteen fatalities from its therapeutic use. In a series of experiments he found that the prolonged use of small doses seemed to be more dangerous than the large one, but the larger seem to have a more intense action. His research also showed that the production of bile was diminished after calomel, and also that the drug had an irritating effect on the kidneys.

Contrary to the common belief, that calomel is an intestinal antiseptic, Dr. Abt, in his series of experiments, shows that on the day after three grains of calomel was administered, the bacterial count of the stools rose from 210 million bacteria per gram to 762 million per gram of the faeces.

Morse & Talbot, in their book on Diseases of Nutrition and Infant Feeding, writing on the subjects of

"Medical Treatment of Disturbances of Digestion,"

"Indigestion With Fermentation,"

"Intestinal Toxemia of the New Born,"

"Treatment of Infestious Diarrhoea,"

recommend a thorough cleansing out of the intestinal tract; the best drug for this purpose is castor oil—it works quickly, thoroughly and causes less irritation of the intestine than other cathartics. The dose should be not less than two teaspoonfuls—it should be given plain.

Castor oil should be tried first, even if the baby is vomiting, because it is often retained when food and water are vomited. If it is vomited—calomel may be given in its place. The usual dose is 1-10th of a grain, combined with 1 grain of bicarbonate of soda every half hour—until 1 or

1½ grains have been given. It is wise to follow it with two or three teaspoonfuls of milk of magnesia. And yet, neither of these men use calomel or castor oil in their hospital practice.

Dunn, on page 173 in his book on Pediatrics, says of Castor Oil: This is the most useful general purgative for use in infancy and childhood. Nothing surpasses it in producing rapid and complete emptying of the bowels. Its chief indication is in various forms of indigestion, especially those characterized by diarrhoea. Infants and very young children do not object to the taste, and even older children will often not mind its taste if it has not been suggested to them that the taste is bad. When the taste is objected to castor oil may be given with orange juice, lemon juice or brandy.

Calomel: This is a purgative and diuretic, but in children it is used almost wholly on acocunt of its purgative action. The toxic effects are renal irritation and stomatitis, but the purgative doses used with children never produce these effects. Calomel is used as a substitute for castor oil when vomiting is present and is often useful in the treatment of vomiting, as when given in repeated doses it tends to correct reversed peristalsis.

On a recent visit to Dr. Dunn's clinic at the Infants Hospital in Boston, I asked Dr. Dunn how many times he had used castor oil and calomel in the work there, and his reply as well as his associates' was that they had never used either as far as they could remember. It is impossible to think that they never admitted an infant in this institution with the above mentioned symptoms. I told Dr. Dunn that he recommended their use in his book, and his reply was that he was going to rewrite it.

Dr. Richardson: I want to thank him for the fine piece of work he has done. He has done a bit of research work—that is searching literature. I used to be like most of them trying to get most of the hospitals to back us. Dr. Smith visited me; I took him around and took him to this Orphan Asylum, where the nurse does most of the treatment. When I am on I let the nurse do most of the treatment. While I was looking at a case Dr. Smith asked a nurse how often I used calomel and castor oil there. Whenever he goes to the hospital he does not get out before he knows everything from the top to the bottom—of course, you know that takes time. You know there are a dozen names of women and men who are writing one thing in their text books and doing another in their hospitals. All of us have gotten to doing that way. Giving a *good* dose of castor oil.

There is no such thing as a GOOD dose of Castor Oil, and yet everyone of us say that. The only medicine I ever carried with me was a vial of 1-10th grain Calomel tablets and I give 1-10th grain until I give ten doses. I thought that would satisfy them.

Chairman: Many thanks to Dr. Smith for this valuable paper, and I am sure we have all profited by it.

Public Health and Education

IMPORTANCE OF A CITY TUBERCULOSIS SANATORIUM.

Dr. R. L. Carlton, City Health Officer, Winston-Salem.

In mentioning the importance of the municipal sanatorium for tuberculosis we wish to go on record as being on very solid ground when we affirm that the sanatorium is only one of the means of efficiently carrying out a program in the fight against tuberculosis by a city or community.

After a campaign of a few years' duration we have in my town a tuberculosis dispensary, physician in charge of dispensary, special tuberculosis nurse, district nurses supervising the home lives and treatment of those in need of their instructions, a system of relief for those unable to provide themselves with the necessary food and medicines—all of these activities supported for the greater part by the municipality, as should be the case. There has been carried on a campaign of education which has accomplished something toward bringing to many of the people something of the knowledge of the disease and how to combat it.

The purpose of the activities of the tuberculosis division of a municipal health department are (quoting from a U. S. P. H. Service bulletin)

1. To alleviate the sufferings of the sick and see that they have comfortable surroundings and proper care.

2. To prevent the spread of the disease and to protect the well from infection.

To be of effective service to those who are sick it is necessary to know of their existence. Here, as you all know, comes the importance of vital statistics—the prompt reporting of all cases of tuberculous immediately after an early diagnosis has been made by the physician, the correctness of statements on death certificates certifying as to cause of death, the immediate following up by a competent person, and by this term is meant a nurse of training and ability, all cases reported as tuberculosis, the families and other contacts of persons certified to have died with tuberculosis; the encouragement of exposed persons to avail themselves of clinic examination and treatment, if needed; the constant supervision of all cases diagnosed "tuberculous" to see that all necessary care of themselves and precautions as to others are observed—these constitute some of the activities of the tuberculosis nurse and dispensary.

There should, of course, be other nurses to carry on educational work in the homes and schools.

Open air schools should be one of the means of every municipality, and every rural community also, to combat the inroads of tuberculosis. Children who are undernourished and anemic should by no means be cooped up in a crowded, ill-ventilated school room—and neither should the normal child. It has been most successfully proven that all school children fare better physically and mentally when their classes are "open air" classes.

The undernourished child should be cared for in a preventorium, where such is possible. The advanced cases of tuberculosis especially should have the care of sanatorium treatment. In Winston-Salem we are trying to carry out these measures as roughly outlined for the care of our tuberculous.

Dispensary, special physician, specially trained nurse, home supervision, sanatorium for advanced cases. At the tuberculosis sanatorium or hospital situated just on the outskirts of the city is provision for thirty-two (32) patients, with possible expansion to sixty (60). The advantage of the location being nearby is apparent—the patient does not have a long trip to make, he may be visited by his friends and relatives, he is much more content than if sent away a hundred miles or more. The care and treatment of patients in the institution is good. There is every reason from our point of view that there should be a long waiting list for admission —for their own sake and for the sake of their families and neighbors. This condition does not always exist. The speaker agrees very heartily with Dr. John Dill Robertson, Dr. Rosenau and others that the forcible detention in sanatoria of incorrigible consumptives will be one of the means of remedying the tuberculosis situation. The health officer is charged with the control of contagious diseases, and this power may be exercised with regard to cases of tuberculosis as well as in cases of scarlet fever or diphtheria. Education, exhibits, lectures, motion pictures have been used in the campaign against tuberculosis and much good has been done; but we do not depend upon an educational campaign for control of diphtheria or scarlet fever. It is necessary to establish quarantine and lay down more or less rigid rules. Every reported case of tuberculosis should be visited by a nurse or physician and he should be told of the danger to his family and friends if he continues to expectorate on the floor; of the danger to himself if he refuses to sleep outdoors; of the danger of over-indulgence in alcoholic drinks, and any other instructions necessary. He should be provided with sputum cups. If at subsequent visits the nurse finds her instructions obeyed, the patient using his paper cups and not expectorating elsewhere, and at least the head part of his bed outdoors and that he is following other instructions, then he is permitted to remain at home and all assistance possible given him there. If, on the other hand, it is found that instructions are not being carried out, the nurse warns him that upon the next visit if conditions do not comply with regulations he will be sent to the sanatorium. Dr. Robertson believes, and so do we, that if every person suffering with open consumption was apprehended and by force compelled to conduct himself in the sanitary manner which patients at the sanatorium are compelled to adopt, the spread of tuberculosis would be greatly reduced. Every consumptive who is trained to follow the rules of hygiene in caring for himself and in protecting his family and associates against his disease is one of the strongest educational elements we can place in a community. Some such plan of forcible detention and education would mean more careful patient and more careful families, it would mean other cases developing in the family would be given earlier medical attention, it would mean gradual lessening of infection and very likely gradual elimination of the spread of tuberculosis.

CITY ABATTOIR AND MEAT INSPECTION.

By Dr. R. L. Carlton, City Health Officer, Winston-Salem.

Various means are used as a protection of the food supply of a city—among them being inspection and supervision by skilled persons of all places where foods are handled, stored or sold to determine that such

places are kept in a clean, sanitary manner; the physical examination by a physician of all food handlers to determine their freedom from communicable disease; the requirement that utensils used in serving foods be properly washed and cleansed; the requirement that all foods, especially meats, be sound and wholesome if to be used for human consumption. Regarding the handling of meats especially, it is our opinion that the supervision of this part of our food shall be done by a man of experience and training, preferably a veterinarian from a school of good standing. In Winston-Salem the slaughtering of animals for food is done at an abattoir owned and controlled by the municipality, and the arrangement seems to be preferable to that of having one or more slaughter houses owned by individuals. The city supplies the manager, laborers, meat inspectors and entire personnel for the abattoir. Every worker coming in contact with the meats undergoes a physical examination at least once a year—more often if in the opinion of the health officer it is thought necessary—to determine freedom from disease. All animals are seen by the inspector before and immediately after being slaughtered and any diseased conditions warranting condemnation cause such carcass to be promptly tanked for fertilizer. Meats are required to be left in cold storage at the abattoir a certain number of hours before being offered for sale.

Fees are charged for slaughtering and after a certain number of days' storage fees are charged if meats are left in cold storage. Our arrangement seems to be working smoothly—the meats are thereby kept under close supervision—all animals excepting calves and hogs may be slaughtered in the country, not in the city, by the producer, and he is required to bring such carcasses for inspection by city meat inspector before offering for sale.

Certain rules are observed as to age and weight of calves and as to condition of beeves, etc., and in the main our meat inspection as done by the city inspector at city markets and abattoir is very satisfactory. Of course, meats shipped into the city by outside packers bear the stamp of the B. A. I., and while looked after by our inspector to determine decay do not require rigid supervision to determine diseased conditions.

Discussion.

Dr. J. E. Brooks, Blowing Rock: There is one phase of this paper that impressed me as of grave importance. Before the fight against Tuberculosis can ever progress very far, there must be compulsory detention of the tuberculous patient in the sanatorium or some institution where he or his movements can be directed, guided and controlled by those in authority. In going into a home and making a diagnosis of tuberculosis and giving instructions as to the management of that case I challenge the doctor, if he be here, who has had success in getting the carrying out of their orders, to hold up his hand.

Our work must fail until we get the hearty co-operation of the public in enforcing our work. The mere diagnosis of a tuberculous patient and outlining his management may amount to nothing at all, the doctor becomes discouraged and feels hopeless, and he is hopeless unless the public gives him that support that forces his patient against his will to take the proper treatment.

Dr. C. E. Lowe, Wilmington: There is one thing hinted at by Dr. Carlton, which I have found to be very detrimental in Wilmington. We have had, for some years, a County Tuberculosis Sanitorium. It has never been the success it should have been. It was never the success it should have been before I began to work, nor has it been since. That arises through the difficulty of getting people to accept treatment in it and that bears out the statement just made that coercion must be the factor in the control of a large percentage of cases. I think it has been my observation that the case that needed control most, the open, free expectorating case, was the one hardest to get control of. The cases among the poor and illiterate are particularly hard to get under control. There are great obstacles in our present state of public knowledge in regard to getting enforcement of the law, a compulsory law for detention in open cases. I think we are coming to that. They are the people, in my mind, who need it—the advanced cases from the standpoint of protecting the rest of the public. I am not speaking of advantages to be obtained from the incipient cases. Dr. McBrayer is the one to speak of that. Another important thing brought out in Dr. Carlton's paper is the Educational Value.

Those people you get in the Sanitorium get instructions and they spread that instruction throughout the county, which is a most valuable means of spreading that information. It is given them through the Sanitorium. It becomes a matter of habit, and they carry it out, better oftentimes than they will under the direction of the physician.

Dr. Lewis, Raleigh:

I wish to ask Dr. Carlton—I was told yesterday that of the total number of patients that had been admitted to the Winston-Salem Sanitorium that only four ever left alive. Of course, if that is true, it seems that the educational value from the Winston-Salem Sanitorium is very small. As a matter of common sense it does not seem to me that the expenditure of money for a Municipal Tuberculosis Sanitorium is the wisest method. I am not accurate as to the number of cases. A movement was started in Wake for the purpose of establishing a Municipal Tuberculosis Sanitorium, but it failed. We assumed that 75 beds in that Hospital would accommodate one-tenth of the patients, and I am told it would cost $2 or $3 per day to support a patient. On a basis of 100 patients it would cost about $100,000 per year to support that institution. It does seem to me that the money that would be expended on a Municipal Sanitorium, that it would be practically only a house of detention, from the late cases which we must bear in mind are not taken into the institution until they are late cases, or until they have infected the other members of the family before they are taken away.

In 1906, when I was President of the National Conference of the State and Provincial Boards of Health, my address was on Tuberculosis. I took the position that money spent on a Sanatorium at that stage of the contest was not spent to the best advantage; that so far as the cure of the patient was concerned that would cost about $42,000 a year to run it. I took the position that if that $42,000 was invested in Health Officers, that the result would be to educate the people on the subject, and the total number of cases that would be cured through that method, by home treatment,

would amount to 50 or 100 more than would be in the hospital. It does seem to me that the money that would be necessary to spend on a Municipal Sanatorium to segregate these patients in the last stages, that if that money was spent for the instruction of the people, employment of skilled nurses, etc., I believe we would get greater results than we do from the Sanatorium. I am more and more confirmed in the idea when we have such a tremendous proposition to handle and not money enough to take care of more than one-tenth of them that we could spend it to a much better advantage.

Dr. McBrayer, R. A.: I am strongly in favor of the educational program. We ought to have a better one than we have. In our aim and struggle I think at times we have overlooked something that we can right now, in the three million discharged soldiers we have. They were trained to accept the hospital treatment for a slight ill. When we find a family that has a case of Tuberculosis in it, if it is father, son or brother that has much training in the army, you can tell him that this sister, wife, husband or brother ought to accept Sanatorium treatment, and I bet you 99 times out of 100 this ex-soldier will agree with you, and he will do his best to get that person to go to the Sanatorium. They know that Sanatoriums are the places for tuberculosis patients, and you are doing wrong if you don't go. I think lots of times when we are doing this educational work if we made our appeal to or through the soldiers, who are so well trained in the use of Sanatoriums and the like, we would get better results.

Dr. Lewis: I want to express my great appreciation in the great work along the educational line, that is being done at our State Sanatorium.

Dr. Carlton: I would like to say, for the benefit of Dr. Lewis that more than four patients have left alive, because more than that many have left there without permission. We have no means of forcing them to stay there. We cannot near take all the patients in Forsyth County. I wish we could. I would think that we ought to have a number of beds in this Hospital to be used for educational purposes and educate them how to take care of themselves and look after the family at home.

REMEDIAL CONDITIONS IN SCHOOL CHILDREN.

MARGERY J. LORD, M. D., Asheville.

Gentlemen, you are all interested in health problems and in preventive medicine or you would not claim to be practicing medicine, in 1920. And yet I am sure to many of you Medical Inspection of school children is a new phase of health work. France began this work when, in 1833, she established a royal ordinance decreeing that school authorities should look after the sanitary conditions of the school children. In the United States, Boston was the first city to establish a regular system of medical inspection, beginning in 1894 with a staff of fifty physicians. This work has steadily grown until now Medical Inspection is provided for by the law in nearly one-half of our states; regular organized systems of Medical Inspection are found in about one-half of our cities, while some sort of a beginning has been made in nearly three-fourths of them.

With this bit of history to refresh your minds, let me now get at the real purpose of this paper. I have divided my paper into three sub-heads, the first of which is:

1. Educational Handicaps: These handicaps concern not only the physical welfare of the child, but are an economic problem of every city and state. Here are some facts concerning New York City children: A child with seriously defective teeth requires one-half year more than a non-defective child to complete the eight grades. About one-half of all school children have defective teeth. In the same manner, the child with hypertrophied tonsils takes seven-tenths of a year more than he should. One child in four has hypertrophied tonsils. The extra time required by a child with adenoids is one and one-tenth years. One child in eight has adenoids. The pupil with enlarged glands requires one and two-tenths years longer. Nearly one-half of the children have enlarged glands. These handicaps to a child's education, therefore, become an economical problem, and it is a simple matter to compute how many dollars are wasted each year in the futile attempt to impart instructions to pupils whose mental faculties are dulled through remediable physical defects. Conservatively speaking, then, we may say that 60% of all school children suffer from such defects and that the instruction given these children suffers a loss in effectiveness of nearly 10% because of physical defects which could be removed. It is indeed very evident that our problem is of real financial importance.

In Bridgeport, Conn., A. C. Fones, D. D. S., has made some interesting and instructive observations. He found in 1912 the cost for re-education in Bridgeport equalled 42% of the entire budget With this fact staring him in the face and realizing that something could and should be done to better the health of the school children, Dr. Fones decided that the most conspicuous defect of the child is the unsanitary condition of his mouth. On examination he found teeth covered with green stain, temporary and permanent teeth badly decayed, fistulas on the gum surface showing an outlet for pus from an abscessed tooth and decomposing food around and between the teeth. Why go any further in your examination of the child? Right here at the gateway of the entire human system is a source of infection and poison sufficient to contaminate every mouthful of food taken. If Dr. Fones were right in his deductions that the most unhygienic feature of a child's life is its mouth, then clean mouths, sound teeth, and toothbrush habit should, to a large extent, rid us of educational handicaps. He has taken up this problem in a very efficient manner, and with a corps of three dentists and twenty-six dental hygienists, he has accomplished an untold amount. There are four distinct parts to this system. First—Prophylactic treatment, or actual cleaning and polishing of the children's teeth and chart examinations of their mouths. Second—Toothbrush drills and classroom talks. Third—Stereopticon lectures for the children in the higher grades. Fourth—Educational work in the homes by means of special literature for the parents. The result of this mouth hygiene has been roughly as follows: In 1918 the cost for re-education in Bridgeport was 17% of the entire budget instead of 42% as it was in 1912. This work is of economic value certainly. But it does not stop there. This change has been a vital one to the self-respect of the pupils and in advance of the normal conditions of the normal children. In 1912, 1,356 children in grades II to VI, all of whom were in the retarded class and over 14 years old, left school to go to work. In 1918, less than 300, all in grades V and VI, received working certificates. In other words, the children had been edu-

cated to see the value of higher education. They had not been retarded through physical handicaps and become discouraged, but their clean mouths and cleanly habits had given them self-respect which in turn made them wish to really amount to something.

So far I have emphasized the economical side of educational handicaps, chiefly because a mathematical problem may be proved without any questioning and when reduced to dollars and cents health problems become more convincing to a community. You, as physicians, have but to give this matter your serious attention to bring before you the possible wrecks of adult life because of defects which should have been removed in childhood. The mentally deficient, the blind, the deaf, the deformed, undernourished, anemic specimens, advanced tuberculosis, organic heart trouble and the like.

My second sub-head:

2. Medical Inspection: There is no one present, I hope, who will not agree that school children have defects which are hindering them from pursuing their studies either because of frequent absences due to illness or actually making them incapable for their work. The first step, therefore, is to find these defects—to seek out the reason that some children "just can't keep up" with their studies or are absent one week each month. We as a state say these children shall go to school, whether they be rich or poor, bright or dull, healthy or sick. Should we not, therefore, be responsible that the child be in the best possible condition to receive this required education and derive every benefit therefrom? Is it not up to us to remove every possible stumbling block from his path so that physically as well as mentally he will become a well rounded and as nearly as possible perfect citizen of our United States? This is what medical inspection and medical inspectors are trying to do, to back up education with health.

Some may argue that it is the parent's duty to take his child for frequent examinations to the family physician. That would be excellent, but there are three drawbacks: First—The majority of parents would never take the trouble to do this. Second—The family physician, when asked to look the child over, "chucks" him under the chin and asks a few vague questions, prescribes a tonic, and the interview is at an end, without the doctor even looking at the boy's mouth and throat—let alone stripping him to the waist and examining his heart and lungs. Third—The expense, if the physician does examine the child and makes a proper charge, the parents will consider it useless to throw away that amount of money on Johnny "when he really isn't sick."

The medical inspector makes a uniform examination of each pupil and after each examination keeps a record of it, and this record is kept in the school building with the child's report cards. There it is in a nutshell, the child's physical standing as well as mental. The physical examination card has room enough to record four examinations on it, thus showing any changes in health throughout the grammar school, at least.

There are many other duties of the medical inspector besides purely the physical examination of the children. His duty, in my opinion, covers anything whereby the health of the school children will be improved. But as my paper is dealing with the children themselves I will not wander too far from my subject.

My third and last sub-head is my real reason for writing this paper.

3. What Shall We Do With These Defects? I want each one of you to ask yourself this question. What shall we do with these defects these educational handicaps revealed to us by medical inspection of our school children? Can we, who are medical inspectors, spend our evenings congratulating ourselves on a big day's work because we have examined thirty children and sent cards home notifying the parents that twenty of these children had some defects which we wished corrected at once? This is but a waste of time and paper if we stop here. Our influence must be brought to bear on the parents themselves and they must be made to see the necessity of the treatment advised for their children. Here is where the school nurse is indispensable. She goes to the home, talks to the mother, leaves a health pamphlet and possibly comes away feeling there is no use to waste time in that home, but eventually, when she has made four or five visits, the parents are convinced that the child should have his tonsils removed or his teeth filled or whatever the defect is remedied. Now comes the hard part. The parents can afford to pay something and their pride makes them want to, but they know they can't afford a specialist's fee. What is to be done? The Medical Inspector has found the defect. The nurse has educated the family into being willing for the operation. The specialist will do the operation gladly for nothing, but the people won't submit to that. One way has been provided by the State Board of Health in their tonsil and adenoid clinics. They look upon school children as all being equal and make a charge of $12.50 for each tonsillectomy, planning to do enough operations in one day to permit about four children who are too poor to pay to be included and paid for by the $12.50 from the others. In this way the surgeon may receive the sum of $100 per day for his services and all expenses of the clinic defrayed by the children themselves. This plan certainly has many advantages and has provided a means whereby many of the rural children have received surgical aid this past year. But, like every good thing, this has been criticised. It was thought by some that the sheep and goats should be further separated and the rich made to pay the specialists fee, and hence refused the clinic.

The Buncombe County Medical Society has adopted the following plan:

"The committee appointed by the Buncombe County Medical Society to devise a plan for organizing a tonsil and adenoid clinic in Asheville, begs to submit the following recommendations:

1. That the public at large, regardless of age, including not only those of school age, but those above and below that period, have the privileges of the clinic.

2. That the privileges of the clinic be extended not only to the City of Asheville, but to Buncombe County.

3. For the purpose of defining the object and the scope of the clinic that the public be divided into the following classes:

A. Those who are unable to pay a hospital fee.

B. Those who are able to pay a hospital fee and no more.

C. Those who are able to pay a clinic fee of $12.50 and no more.

D. Those who are able to pay more than the clinic fee.

4. In order to provide for those whose means place them between Classes

A and B, and between Classes B and C, and that no one may be denied the privilege of contributing to the support of the clinic according to his means, that flexible limits be placed on Class B.

5. That the privileges of the clinic be extended to Classes A, B and C.

6. That Class D be referred to their family physician for advice.

7. That each applicant for the clinic must bring from his family physician a written statement as to which class he belongs, or what fee he is able to pay.

8. That the clinic be held in the three general hospitals of Asheville and Biltmore, North Carolina, all three of these hospitals having generously offered their hospital facilities for the purposes of the clinic, conducted as herein set forth.

9. That all clinic fees be collected by and apply to the support of the hospitals.

10. That the clinics be conducted in the various hospitals from day to day as applicants present themselves and as facilities permit, rather than in large groups.

11. That the managements of the various hospitals be requested to co-operate in developing further details of the clinic.

12. That the co-operation of City and County health officers be solicited.

13. That no physician make any charge for services rendered in the clinic."

But we find more defective teeth than we do tonsils and adenoids. We could keep every dentist in Asheville busy filling children's teeth. A dental clinic is just as important as a tonsil and adenoid clinic. Last summer we had a chance to see what the State Board of Health was doing along this line when they sent Dr. Schultz to us, who in six weeks' time based on our local charges did work amounting to $2,500 on our school children. The authorities of the city of Asheville have already signified their willingness to furnish funds for the equipment of a dental clinic, and it is my hope that next September will see us ready to start the school year with a permanent dental clinic—operated by, if necessary, only a part time dentist, whose salary shall be paid for by both county and city, thus giving the children of the county the same privilege as those of the city.

The school nurses are doing all in their power to prevent dental decay, by toothbrush drills and by making it possible for every child to own a tooth brush. From the Prophylactic Company children's tooth brushes, factory seconds, can be secured for the children at 6c each. Many gross of these tooth brushes have been sold to the children this year. The Modern Health Crusaders Movement, literature published by Dental Manufacturing Companies and the Metropolitan Life Insurance Company, has done much to interest the children and parents in the proper care of their bodies, the necessity of plenty of sleep for growing children and the value of regular meals composed of nutritious food. All this is doing its part to improve the physical standard of our school children.

To summarize them: Medical Inspection began in this country in 1894 and has increased until now three-fourths of our cities have some form of

Medical Inspection. Physical defects which mainly are—decayed teeth, adenoids, hypertrophied tonsils and enlarged glands, are educational handicaps, which, if properly attended to in early child life, would relieve the state of a large financial burden due to the cost of re-education of retarded children. Medical Inspection has become a necessary part of preventive medicine practiced by every board of health, but Medical Inspection is powerless to reach its full value unless a means be provided which will amply and adequately give the public a way to have these defects treated which will bear in mind the fact that all people have a great deal of pride, that very few want to be on a charity list. Yet many have a nearly empty pocketbook.

In concluding, gentlemen, let me urge you to a candid discussion of this paper. I am expecting to learn more from your discussions than you have from my paper.

Discussion.

Dr. George M. Cooper, Raleigh: I wish to emphasize the fact that Dr. Lord in her grand paper has sounded the key note of this profession. She stated the financial problem was the key note of the whole thing. She brought out another important problem. That is "To back up the education of the children with health." I think that is the whole thing in a nutshell. As to the Asheville, Buncombe County, plan for getting this work done, I think it will succeed. I don't know of another place in North Carolina where it would succeed. That is that the Medical Inspector and those three skilled employees will camp on the trail of every physician in that county. I would hate to be the doctor that would prescribe a medicine for diseases of the throat and let one of these people find it out. I will close by saying that four officials are four solid bricks in Asheville.

F. H. Richardson, Brooklyn, N. Y.: I wish to thank Dr. Lord for one idea she gave me, that is practical application of a way to put across the corrections after you have found them. We have been working this along with ideas that originated in Boston for Tuberculosis. We get children from the general clinic, who we find undernourished and take in our case the weight, where she takes the retardation. We find the teeth common and tonsilis and defective heart quite common. Eye defects common. We find we can never increase the weight until we get the tonsils out and teeth cleaned up, until we can get the youngsters to get those things done, no matter what he does he will not gain weight. Another thing is getting 20 to 60 children together with their parents, if they can come, and put a little boy scout in it. Say a little boy has a chart and he sees a two or three-ounce gain, and we give a certain prize if he gains one-half pound or one pound, and it is surprising how keen those children are to get that prize. They make their parents do things that they don't want to. The children are the ones who initiate the improvement. The New York City Board of Health tried getting the family physician. They brought out the defects found by the family physician, and the Medical Inspector had it on the family physician. They could not get enough family physicians to make this inspection. It is very interesting for me to find how large a proportion of the special practice can be composed of mere children. They are urging me for treatment.

The Typhoid inoculation and all those things are being urged by the people, and the doctor who is not prepared to do that has, in my mind, a very serious responsibility. The hospitals seem to set a good example to be followed by the city when they urge the establishment of school examination. I think the hospitals can well set the example.

Dr. Lewis, Raleigh: As the oldest specialist in North Carolina and a man who has been associated with Public Health work in the State thirty-odd years, I feel it my duty to say a word or two. I think this work that is being done by the clinics is extremely important, and I think the present plan that has been devised is the best plan. As I understand, at Asheville the children are brought to the clinic. And for the reason that the rich man can't bring his child to the clinic and have him operated on for any less than the specialist will charge. You will see, I think, in a moment how it is that the clinic conducted upon the present plan is one of the best methods ever devised for the purpose of advertising the business of the specialist.

These clinics are held in a certain county and a number of defective children have been operated on in these clinics, and they go back home and the neighborhood will see the effect the operation has had. The clinic is not held in that county for a long time after that. What is the consequence? The consequence is that the people knowing they could not get advantage of the clinic for twelve months send their children to the specialist. The specialists who do these operations have nothing to lose from the financial point, but everything to gain. There are thousands of children in this state who need to be operated on, and a majority of those would never be reached if not by this method. This will not only be the means of extending benefit to a larger number of children in the community, but of putting more dollars in our pockets.

If there is not something else in the Medical Profession besides money, I think it is time for us to get out. In contrast to the attitude that the physician is after the money, ignoring the welfare of the community, I want to tell you a beautiful story of Erwin Cobb. He said: "The story I propose to tell you now, the beauty of it, is that it is true." He said that in one of our Southwestern towns there lived a Dr. Thomas Lyerly, a country doctor. The rich people had never heard of him. His practice consisted of down and outs and drunkards. He had an office in a respectable building for a while and something came along and he had to move, and the only place he could find for an office was over a Livery Stable. He took a plank and painted a sign on it—"Dr. Thomas Lyerly, his office is upstairs," and nailed that to the stable. He had a call several miles off, and as a result of exposure he contracted pneumonia. He came home, went to his room and locked the door. In a day or two they missed him and found the door locked and broke it open. There lying on the bed was Dr. Thomas Lyerly, with his old account book and pencil in his dead hand, and he had written across each account, "Paid in full." He was taken to the cemetery, and these people followed him on foot, no carriages. They came back to town and were discussing that they ought to put a monument over his grave. They took up the post on which he had painted this sign on it, and planted it at the head of his grave—

"DR. THOMAS LYERLY, HIS OFFICE IS UP STAIRS."

I think when we compare that, we can say there are thousands of them in this country. When we compare that attitude towards humanity, I don't believe any of you have it in your heart to say that this society is out for the love of money.

Discussion closed, Dr. Lord: I want to say, gentlemen, that the clinic I outlined is at work in Asheville. We have been decidedly handicapped, but we are running it, and next year I hope we will be able to report what has been done.

I will say that the only thing we have done of much importance is to get weight charts from the Colnos Dental people. They send us large charts that will hold the names of between 40 and 50 children. We try to have one in each room in each school building and record the weights of the children on this chart. On a table in one corner is correct weight, age and height. We hope to get up to the standard.

These clinics that have been held by the State Board of Health or by any city, for tonsils, adenoids or dental, I think the highest value is undoubtedly the educational. The weight and health of the child cannot be improved unless these defects are removed. In order to do so we have certainly got to educate the parents.

Dr. George M. Cooper, Raleigh: Before reading my paper I wish to express my cordial appreciation to Dr. Lewis for the power of strength he has been to us in the past. For the benefit of some of the younger men and women, Dr. Lord may not know that Dr. Lewis was the first recognized specialist of ability in the State of North Carolina. For forty years or more he has maintained his position all the time in his profession. This generation will never know how much good he has done in the world, and I wish to commend his admirable spirit, in placing his service before money, to some men in our profession.

THE STATE PLAN FOR SECURING MEDICAL AND DENTAL CARE OF SCHOOL CHILDREN.

By G. M. Cooper, M. D.,

Director Medical Inspection of Schools, State Board of Health, Raleigh.

On assuming the duties of Medical Inspector of Schools for the State of North Carolina some five years ago, and after having had a previous experience of two years in county work of this nature, it did not take but a short while to reach the conclusion which every experienced person engaged in this work soon reaches, that medical inspection that does not provide a systematic plan of follow-up work is practically worthless.

Anything short of a State plan for meeting the many problems that one confronts at every turn will not be satisfactory. There are certain things to do which must combine the preventive with the remedial problems. In the first place, every inspector soon finds that the epidemiology division must function properly or the schools are demoralized for a certain period during each session. Parents of perfectly well, healthy children will be found keeping their children at home because of the fear of whooping cough or measles, and the children of careless parents will be found spreading

such infections in the schools. So the first thing that has to be done, is to see that the well children are not penalized by the few careless patrons of the school. The intelligent and watchful interest of the teacher is absolutely essential. Again, in practically half the State every year as soon as the schools settle down to work after the Christmas holidays, outbreaks of smallpox begin to demoralize the attendance again, especially in the country districts where compulsory vaccination against smallpox before entrance in school is not enforced. So we find that often 90 per cent of healthy children are kept at home certain days because 10 per cent of the children may have been thought exposed to smallpox. The only sensible thing to do in this matter is to require county-wide vaccination against smallpox before children are admitted to the parochial or public schools. But the real big problem with which medical inspectors should be concerned is in the correction of physical defects after found.

The State Board of Health of North Carolina has developed a system of caring for defective children, both surgical and dental, which has been carefully worked out over a period of several years, and is primarily based on necessity. The first effort was directed toward the care of the school children's teeth because of the fact that about 80 per cent of the children enrolled in the schools of the State were known to have need of dental treatment. On July 10, 1918, we started the first systematic work in this field. The plan, as everyone here knows, is to take the dentist to the children out in the school houses or in convenient country centers, whether the schools are in session or not, and have the children from six to twelve years of age who are known to be in need of dental treatment brought to the dentist for the simple forms of treatment. Each dentist is equipped with a portable outfit and the emphasis is placed on prophylaxis. The idea here is to cause a state-wide awakening of all the people from the homes of the wealthiest to the remote cabins of the poorest of the State's children to the necessity of dental care at the right time for the teeth of every child. We need not go into figures, but simply state that the importance of this move is becoming more and more appreciated by responsible people throughout the length and breadth of the State.

The problem of carrying surgical aid to children suffering from the more common defects of childhood, such as diseased tonsils and adenoids, has been much harder to solve than the dental care, but the necessity of some solution has been no less imperative. After an experience, as stated in the beginning of this paper, of several years, based on careful medical examinations and observations in many counties, it has been found that there are no less than fifteen out of every hundred school children enrolled in the schools of the state suffering from diseased throats demanding operation by competent throat surgeons. These defects have been so patent that the teacher, the parent and even the neighbors readily assert that something is wrong and ought to be remedied. Some of these children have tubercular or rheumatic ancestry either direct or closely collateral. None of them without the operation can be reasonably expected to develop into healthy men and women without such operations at the proper time. It has been learned beyond question that less than 1 per cent of such children ever even consult a specialist and less than 10 per cent ever taken to the

family physician. We have found in the majority of such cases that the average fees of specialists are beyond their reach; but what is a much more difficult problem, there is widespread fear of the operation, ingrained belief that it is devised for the enrichment of doctors and specialists. So, primarily to dispel such foolish beliefs and at the same time to convince the most doubting that the sole purpose of this operation must be for the benefit of the children and the children alone, and finding that in order to do this the only possible way to do it was to adopt mass strategy, the organization of what we have been pleased to term *tonsil* and *adenoid clubs* has naturally been the logical step. It is not necessary here either to go into details, but to simply state that these clubs have been devised and put into operation successfully in enough counties and different sections of North Carolina to create a wide-spread interest in the operation and what it means for the children. The specialists engaged in the work have been amply paid for their service, the people have not been pauperized and the whole thing has been taken out of the haze and fog of commercialism to the everlasting benefit of the children, for whom every medical inspector and every school authority in North Carolina should be most concerned. The future of this work for the children of the State depends to a great extent upon the support, financial and moral, of the medical profession and the teachers and school officials, high and low, in the State of North Carolina.

Discussion.

Dr. S. A. Stevens, Monroe, N. C.: It has just happened that an Adenoid and Tonsil Clinic was conducted in my county week before last. I think they operated on about 82. They turned down over 100 in the county, and did not get to operate on any of the town children. So far as I have been able to learn from comments of the people at large, it certainly has met with the approval of the public. I think if you will put it on a selfish basis, let them have no other thought, but that I am fully persuaded that it will be of benefit to the specialists themselves financially. In the first place it makes the people acquainted with the specialist who does the work, and for every case that he operates on at that clinic I have no doubt that he will get at least five cases that will come and pay him his full fee. If they want to put it on a selfish basis, I think it is a good thing for the specialist himself and a great benefit for the ones that are operated on. My people are begging for another Clinic. I hope the State Board will be able to put these Clinics on as often as necessary until we get all these things cleaned up. I think it will do as much good as our Typhoid campaign did. We gave the Anti-Typhoid Treatment to ten patients.

Dr. Lewis, Raleigh: As you gentlemen all know, I am extremely lame from a joint disease Tuberculosis at the age of 2½ years.

My oldest grandson was visiting me last summer; he complained of his knees and limbs precisely like my old attack began. When I heard him crying you can imagine what dagger that was in my heart. My son carried him to the University of Virginia, and they decided that he had Tuberculosis of the joint. Dr. Holt examined him and ordered that he be put to bed and have his tonsils removed. He was kept in bed with this bandage on one month, and then it was taken off. He was kept in bed another month

without the bandage, and in two or three weeks after that he was turned loose, a perfectly well and strong boy. This is a striking instance of the value of the removal of affected tonsils.

Dr. Laughinghouse: There is one point in this discussion that has not as yet been touched upon, and to my mind it is one of the most important points that we have to consider in perfecting a program for tonsils and adenoids. The point is that 82 per cent of the people in North Carolina are rural people. If we do not have some glaringly, impressively, almost forcible plan, to bring to the attention of the rural father and mother the necessity of removal of tonsils, we will for a long, long time be greatly behind in this undertaking.

Asheville, Charlotte, Winston-Salem and cities of such size can very easily handle the proposition within their own corporate limits, but I doubt if they are able to handle it right away outside. We had in Pitt County a Tonsil Clinic; it has 50 to 60 thousand inhabitants. The man who did the work was a nose and throat man in the county. He operated on somewhere between 20, 30 or 40 patients for two days for the Board of Health. His work has more than doubled since that clinic. That is what it means to the Specialist, and if the Specialist sees fit to look upon this proposition from a selfish motive or from a financial viewpoint only, if he does not care whether his office is up stairs or down, he is bound to see that this is a good form of advertising. Say if we give him an opportunity to hire an advertising manager, he can't to save his life get before the public the actual value of the job quite so well as the North Carolina Board of Health is putting it before the public. I verily believe that the Eye, Ear, Nose and Throat man who is opposing this proposition because of encroachment upon his privilege, I believe he has well developed myopia.

I sincerely hope that Dr. Lewis, with his long experience, can take them in his office and see if he can't clear away this shortsightedness that is in their financial eye. In addition to that, the people of North Carolina are not an easy people to satisfy. Charlotte can do it, Asheville and Winston-Salem can do it, and a number of the other great big towns. But we can't classify 82 per cent of these people; it is impossible for us to do it. I know men who took their children to the Board of Health clinic and paid the $10 or $15 and went to some of their neighbors, some who were poverty-stricken, and brought their children to the Nose and Throat men and paid the fees out of their own pocket that the doctor charged. There is nothing that we can do that will help the Tonsil and Adenoid work as this Clinic work has done.

The dentists will tell you that Dr. Shultz sent into their offices five or ten times as much work as he himself did, or they would have gotten had he not been there.

OUR TUBERCULOSIS PROBLEMS.

By Dr. B. O. Edwards, Asheville, N. C.

There has been so much said and written on this subject and so little seemingly has been accomplished that I hardly know where to start to discuss it.

There were 42,274 deaths in North Carolina from all causes in 1918.

Of this number 7,948 died of influenza and 3,412 from tuberculosis; 1,793 of these were colored and 1,615 white. This is the official report by the Bureau of Census at Washington. I was unable to get the figures for 1919. Dr. L. B. McBrayer states that we have at present 9,500 reported cases of tuberculosis in North Carolina, and he estimates that 3,000 of these are colored. I would estimate that we have at least as many more cases in the State that have not yet been diagnosed and reported. We have one State sanatorium and two county (at Winston-Salem) tuberculosis hospitals to take care of all this number and while there has been a great deal of good work done in the State institution both directly for the patient and also in an educational way,

After having visited a number of our best tubercular institutions in the United States and studying the different methods of management of tuberculosis patients here and having had the privilege of visiting more than thirty of the best tuberculosis sanatoria in Central Europe, scattered through England, Scotland, Ireland, Switzerland, France and Italy, as well as a great many of their tuberculosis dispensaries and several open-air schools. And having studied and observed their methods carefully I am thoroughly convinced that the modified Edinburgh scheme, originated by Sir Robert Phillip of Ediburgh, is far superior to any I have studied.

Pennsylvania has adopted a modification of the Edinburgh scheme and is getting good results.

The Edinburgh Scheme consists:

1st, of the tuberculosis dispensary; 2nd, of a Sanatorium for early cases; 3rd, of a Hospital for advanced cases; 4th, of a Tuberculosis Colony for those that improve, but need a more prolonged treatment; 5th, of an Open-Air School.

Taking up in detail the Edinburgh Scheme of the tuberculosis organization, the London Dispensary will be described. London is divided into 29 metropolitan boroughs, including the city of London, and the population is approximately 5,000,000, carrying in different boroughs from 50,000 to 250,000. There is one dispensary for each borough, and the total number of dispensaries has been determined by the number of governmental units rather than by the medical requirements of the situation from the standpoint of tuberculosis. The dispensaries are under the Public Health Department of the London City Council. Several of the dispensaries have only been in operation for a short time, while a few of the others were established about ten years ago.

The Paddington Dispensary at 20 Talbot Road, which I had the pleasure of visiting several times, is one of the oldest and best equipped, and was opened in 1909. The medical work is of a high order, and is done by Dr. R. S. Walker, a trained tuberculosis doctor, who devotes his entire time to this dispensary and its patients. Special hours are arranged for new cases. Old cases and working adults. These latter attending evening sessions of the dispensary.

There remains much yet to be done that could be done if we had adequate facilities for caring for several hundred more patients each year. There is usually a long waiting list and it often takes several months for them to gain

admission. I find that many of the patients treated there do well and show marked improvement, but have to be discharged in about four months to give room for others and often go back to their homes and former conditions and relapse and die; where if they could have had twelve or sixteen months' treatment in the institution they might have been permanently benefited or cured.

All caes of tuberculosis who desire treatment are examined and a suitable form of treatment is decided upon and advised. At the same time useful advice and instructions are given on the subject of diet, ventilation, sputum disposal, occupation, etc.

Some throat work, but routine laryngological examinations for all new patients are not carried out. There is no service of radiology at the dispensary, and adequate records of all cases are kept in convenient files. The patients receive medicine there, and are expected to pay two cents for consultation.

An open air school (The Kensel House) is closely affiliated with the dispensary. This is an admirable institution and is efficiently managed. Hot coca is served at 10:30 and an excellent lunch at noon, for which the children pay seven cents.

During 1918, 700 patients were treated at the Paddington Dispensary, of whom 22 per cent were definitely tuberculous and 25 per cent were classed as suspects. A reasonable amount of follow-up work in the home was done, and the quality of the social service is excellent and is done by trained social workers. The whole time and one part time worker is employed. Local tuberculosis care committees which are a compartively recent development form a part of the organization of each tuberculosis dispensary in London. This is an example of the dispensary systems of the scheme. I found this carried on about the same, with some slight modifications, in Edinburgh, Aberdeen and Glasgow, Scotland, also in Dublin and Liverpool.

Farm Colony System.

I had the privilege of visiting the Cambridgeshire or Papworth colony in England and Edinburgh or Polton colony and Hairmyres colony in Scotland last year.

I will describe briefly the Hairmyres Colony Scheme. The scheme embraces a large sanatorium and work colony at Hairmyres, located nine miles from Glasgow, Scotland, in an agricultural parish lying a little more than 500 feet elevation above the sea level and situated within easy reach of Lanarkshire. The Hairmyre Scheme is of a special character and is fairly representative in its object and purposes. It proposes to deal with those cases of tuberculosis which have so far advanced and improved by institutional treatment that it is expedient the treatment should be continued and extended in such a form as will restore the persons affected to a condition that they are again fitted to take up active work. At Hairmyres the Local Authority have lands extending to about 300 acres, and it is proposed that the persons transferred there should be under medical supervision, undertake graded labor of a character suitable to their condition, and at the same time be trained in different occupations connected with work on the land, so that they will be fitted to follow and obtain their living from an

outdoor life in the future. Children will also be treated at the Colony. The capital cost of establishing the scheme is estimated at about 150,000 pounds or $700,000. The necessity for the inception of a Farm Colony as an indispensable part of the scheme for dealing with tuberculosis has been unreservedly recognized. It is found from past experience that simply to afford Hospital or Sanitorium treatment to persons affected with the disease and then to discharge them with no alternative but the resumption of their former occupation, which in most cases is wholly unsuited to their conditions was entirely futile. At Hairmyres, as already mentioned, graded labor is provided and instruction is given in farm work, market gardening, poultry and pig raising and elementary forestry work, and in connection with the forestry a tree nursery has been established at Hairmyres.

At Hairmyres, up till December 1, 1919, only children had been treated. The Scheme not having been at the stage that adults could be admitted. The buildings and the Scheme generally, however, were practically completed and would be available for the reception of patients within a month's time. Accommodations have been provided for 250 to 300 patients. The Pavilion stands at an elevation of 580 feet above sea level. They are of the Butterfly type, and are erected on the ridge of a general slope facing the south, thus ensuring the maximum of sunshine; they command a magnificent view of the surrounding country. The pavilion administrative block and associated buildings are spread over an area embracing thirty acres. An established belt of trees gives adequate protection from the North, and Shelter Belts have been planted to acord cover from the prevailing winds. The buildings are fitted with all the most modern appliances. There are in residence at Hairmyres an experienced Physician-Superintendent, Mr. A. M. McPherson; a Matron and stac, a Farm Manager and assistants, a fully qualified Dairymaid and assistant; a Head Forester and assistants, and a Head Gardener and garden laborers.

Those members of the staff have been selected having in view not only their qualifications for the work under their charge, but also their suitability by temperament and otherwise for working and training the patients at the Institution.

In conclusion, I advocate a modification of this scheme to suit our scattered population, which should consist of a dispensary in each county, and a doctor the whole time, health officer where there is one employed, or the county physician and one or two nurses specially trained for this work. Also a tuberculosis doctor as consultant who could serve in about four counties and should visit each dispensary at least once each week and consult with the doctor in charge.

Also the building of a new hospital with ample room for the early cases. The doubling of the capacity of the present institution for advanced and moderately advanced cases, the establishment of a tuberculosis colony for those showing improvement and requiring a more prolonged treatment. A new and separate institution of like nature for the colored people.

To do what I have outlined will cost money, but what better investment could the great commonwealth of North Carolina make than saving the lives of thousands each year from the great White Plague? The best investment any state or nation can make is to care for the health of its people.

The state has provided amply for the deaf, dumb and blind, for the insane, ample room and attendants are provided; yet for the thousands afflicted with tuberculosis, who have not the means by which they can get the proper care and attention professionally at home, we have only one sanatorium for the entire State. It is up to us medical men to stand together as a unit and make an earnest appeal to the State to lend a hand to help our cause in this, the most terrible and surest life destroyer within the confines of its borders today.

May I close by quoting the words of a consumptive—Washington Irving: "What, after all, is the mite of wisdom that I could throw into the mass of knowledge, or how am I sure that my sagest deductions may be safe guides for the opinion of others but in writing . . . if I fail, the only evil is my disappointment; if, however, I can by any lucky chance, in these days of evil, rub out one wrinkle from the brow of care or beguile the heavy heart of one moment of sorrow, if I can now and then penetrate through the gathering film of misanthropy, prompt a benevolent view of human nature and make my reader more in good humor with his fellow-beings and himself, surely, surely, then, I shall have not written in vain."

SOME OF THE THINGS NECESSARY TO THE ERADICATION OF TUBERCULOSIS.

Dr. J. E. Brooks, Blowing Rock.

The days of secrecy and mysticism in medicine are gone. The doors are now thrown wide open, and all men are invited to come in, see for themselves, examine our work, put it to the test, and decide for themselves its worth. We have approached a new stage, live on a higher plane and invite constructive criticism. We are applying our knowledge to the common good, and giving without the asking the fruits of our investigation to the general welfare. We know we are at the dawn of a new era. A world-wide age is upon us. Universal democracy is thrust in. The destiny of man is the chiefest concern of the doctor, and those who assay to lead must be capable, without spot or blemish, and worthy of the golden day that awaits us. The great doctor will heed the call, and the small one must We have no time to lower our ideals or to gather gear, because our work deals without limit or class with every creature under the sun. The doctor may not be a benefactor to begin with, but his work leads to that destiny if he pursues it free from fraud and guile. The new age in medicine has not yet seen wide experience or effected a good working organization, but the results obtained by it are so vast and promising that no man whose eyes are open can dispute its worth or work. I confess no liking for the apothecary shop—but there is a *divine thrill* in getting there ahead of the procession. In preventing disease you plant a rose instead of inurning ashes. . . . The new open door of co-operation of the profession and the public does not aim to make practitioners of the laity. It means to educate the laity to co-operate with the doctor and bear him up in every good word and work Nor does it mean the loosening of its hard rules to the quack and vendor, but it does mean to cut off the quack's head through education. It means to give to the public sufficient scientific knowledge concerning contagion to secure his help in eradicating disease. Blackstone wrote his Common Law

for the gentry of England that better citizens might result therefrom. After the beginning of the world war Sir William Osler chided England because its ruling classes, though graduates of Eton and Oxford, knew too little science to be capable of their work. He cited as witness the fact that the Minister of Foreign Affairs, when called down for allowing hog lard to be shipped to Germany, confessed he did not know that glycerine, one of the chief sources of explosives, could be derived from hog lard. Dr. Osler demanded that England teach all of her men the rudiments of science as a necessity.

For years I have read with interest the current literature on public health and preventive medicine; and the accomplishmnets along these lines are so fine that men thought them impossible. The sanitary work of General Gorgas at Panama enabled the United States to build the Panama canal —a thing which the world-renowned engineer, Count Ferdenan De-Lessips, could not do because the enemy, disease, was stronger than his skill as an engineer. The fight against yellow fever, typhoid and cholera are almost won, and the fangs have been extracted from diphtheria and smallpox, while a great war is being waged against tuberculosis. And brilliant addresses, illustrated until the eye can see, are being delivered daily. These shows and addresses have amazed and thrilled the public mind. Edwin Booth could entertain no more brilliantly in impersonating Hamlet than a brilliant lecturer, well equipped with illustrations, can do with an up-to-date address on public health. A thousand times have I been asked to explain phases of these writings and addresses by those who saw and heard them. And it is indeed an impossible task for me to make intelligible a subject when the questioner has no scientific knowledge upon which my explanation must rest. I answer his questions, but I leave him without understanding. These lectures, though as good as they can be made, cannot enlighten me on a subject that requires some science as a basis for such enlightenment. The public must understand before it volunteers its whole-hearted co-operation. None of us believe anything we have no way of understanding.

The public is inviting us to go deeper into the subject than we have ever gone. It is placing its children at our disposal; and it is through the coming generations that Providence is showing us the way. Through the public schools the future problems of public health and preventive medicine must be solved. I do not believe you can make a man all-around fit by making laws to make him whole. You must lead him and show him the way. Let us be reminded that in a few short years the world in miniature will be in school. If the parents or guardians are indifferent, the State is not going to be a slacker with its own life—and the State must educate to save its life. In the schools will be laid the foundation to fight all contagion and make the term prevention a reality. Out of all the expense, the suffering and tragedy and death and victory of the world war comes one word clear above all else, a word that will be the watchword of civilization in the unnumbered generations to come, and that word is "FITNESS." Physical fitness is the basis of mental and moral fitness, and there can be no absolute fitness that does not qualify the man and woman to think normally, possess normal health and a sound moral character. I believe that a majority of the weaknesses human flesh is heir to are traceable to physical unfitness.

The doctor of medicine gives his life to the study of life, and by virtue of his work becomes a biologist. We all know that mediocraty as rule biology applies to man, with the great and powerful the exception; and of these exceptions no known law governs their advent and no one knows from whence they come. Shall the doctor use his biology to no higher purpose than the pasting together of broken pottery? Would it not be better that he use his science to remove the cause of this order so that the great and powerful will be the rule, and the weaklings the exception. Indeed, we do produce numberless intellectuals and geniuses of varied kinds, but it is only the few who are touched by greatness, and though widely separated, they are generally contemporaries in periods far apart.

EDUCATION.

The hour is at hand when the doctor must begin the work in the schoolroom. This will reach the world in a score of years. The rudiments of physiology taught in the public schools taught physiology to no one, but the simply and beautifully illustrated chapter on the baneful effects of alcohol on the human system had far greater results in driving alcohol out of America than did all the bread-counter oratory of the world. Let the Medical Society of North Carolina, with the State Board of Health, appoint a committee to collaborate and formulate a manual of preventive medicine and public health and embrace concrete primary information of contagious, infectious and communicable diseases, their causes, modes of conveyance and transmission. It should contain the information the laity must have before the public can give the doctor a whole-hearted helping hand in prevention. This treatise should be one that can be used from the fifth to the seventh grades, and made a part of these grades. Of course, the committee would decide the nature and thoroughness of the text. It must be made clear and understandable to every student capable of passing the seventh grade. The public teachers must prepare themselves to teach this text. The colleges and normal schools must give them these courses, and the course must be more complete for the high school and college. This, when properly put in operation, cannot fail to produce world-wide results.

Gentlemen, when we begin with this method of fighting communicable disease we begin a revolution in public health work that can never look back, and by this method tuberculosis will be made a rare disease indeed. I approve of the great work of the Sanatorium, but the Sanatorium gets many a patient when he is too sick to be taught or when the work on him is but patchwork. I am fully aware that the Sanatorium has done vast good. Now let us go to the root of the evil and cut it out.

THE NEGRO.

Has anybody in our state done anything to prevent the dissemination of tuberculosis in the negroes among themselves, and from them to the whites? Does anybody have any idea what percentage of the negro race What provision has been made to treat the negro patient when his case is pronounced tuberculosis? Can we accomplish any serious results among the whites until like results have been accomplished among the negroes? Can you prevent flies swarming around the mansion of the rich man while his neighbor's filthy hut is a breeding place for them? Does not sanitation

itself mean complete sanitation, Why not use the incipient tubercular patients, and there are many of them, among the negro convicts of the state, to build a sanatorium and develop a farm for the tubercular patients of that race? And may I not add that it might be a good thing if the incipient tubercular patients among the white convicts be employed to develop and cultivate the farm at Montrose for that institution? While their recovery is directed by that institution.

Discussion.

Dr. Frazer, Asheville: I think there could be no question as to shortage of Sanatorium in this state. We have begun to wake the doctors up to the necessity of taking care of these cases.

We realize it is a chronic infection. In my opinion, it is a large economic disease. I am suprised that this was not brought out more in the papers. We know that infection takes place and that all the education we may give the child is very valuable, but it will not prevent the infection that has taken place. We cannot always cope with the condition that the patient arrives at when he becomes of age or takes his place in the work of the world. We will say with long hours, or hard work and not enough food that the patient loses his resistance and becomes incipient tuberculosis.

Dr. Brooks spoke of the negro, and I think that is going to deserve considerable attention. We have been regarding them as doomed. We felt that no matter what we did for them, in the end the result was the same.

I saw recently the report of the Maryland Tuberculosis Association, that the negro had made about four-fifths of the progress in the Tuberculosis Sanatorium at Maryland compared to the white man. It is not quite fair to compare the death rate of negroes to the whites. When we say that eight negroes died to four whites of Tuberculosis we might think that is the racial trait. The negro is by no means given a fair chance. The recent teachings have shown that if we give the negro a chance he will get well.

The establishment of a sanatorium for the treatment of patients privately, while we may get great results in the near future, it does not mean that that patient is cured, that was followed by the word "arrest." We may say "arrest-ed." It is going to take not only Sanatorium Treatment, but after-care for months and years until we can decide that the patient is cured.

Dr. R. McBrayer, Sanatorium: In answer to Dr. Brooks' question as to what is now being done for the negro, I would like to say the State Tuberculosis Association is running a truck, with motion pictures that is carrying its films on Tuberculosis, the Modern Health Crusader, the Public Health Nurse, Oral Hygiene, etc. This car goes to the county and is under supervision of the Public Health Instructor—he is in Mecklenburg this week. The negroes are taking much interest in this, and it is going to give excellent results. I think his point was well taken when he said we can't stop infection in the white people when we have that infection living at the back door. We don't notice the negro much when he gives a little cough, but we should. However, I think that is a very important problem from now on, and we probably have been a little negligent about it up until now.

Dr. Carlton, Winston-Salem: I would like to say in addition to what Dr. McBrayer has said in defense of my own health department. We have

a dispensary in our city for white and colored, and in our hospital for tuberculosis we have as many beds for colored as white and as many treatments among colored children as white.

Dr. Stevens: I would like to say a few words as regards the negro. It is a well known fact to all of us that the virulence of bacteria vary. One condition is passing bacteria through an animal that offers low resisting power. As has been said here, the negro as a race offers lower resisting power to the growth of tubercle bacillus. The negro being infected with tuberculosis develops a more virulent type of the disease. Any negro infected with it is a greater possibility of danger to others than from any one else infected with it. An infection from him is apt to be a very acute type of infection. Protecting the negro is a very important question of protecting the white race also.

Dr. Anderson, Raleigh: I want to endorse this paper of Dr. Brooks on one point, and I am glad to hear a man of his information and work stress the point of education, of management and prevention of tuberculosis. I feel in my own work rather pessimistic at times, because of the lack of information and education in the prevention of the mental diseases. I have gotten so much information that I feel inspired to be more hopeful in my special line of work from the work you folks are doing in the public health work.

I am reminded more and more of what we lack in the prevention and real education along the lines of mental diseases. If you look at it right, the mind is really more important to keep well than the body, and as our Governor expressed it some time ago, that we have the cart before the horse, and therefore the importance of education as Dr. Brooks emphasized. We have to go on in the school room and educate our children on this subject of disease prevention, whether physical or mental. When we come to think of the educational forces that we have in North Carolina, if I understand it right, it makes a man feel pessimistic. They tell me those school houses are occupied or frequently occupied by incompetent workers. That talk that the lady made from Randolph county yesterday was the best thing I have heard in a long time. If we could get a few workers in North Carolina to handle diseases of the body and mind, it wouldn't take us long to educate the people in the right direction. Education is the key-note, and when we can get it into our schools and get these things handled by competent school teachers, then a brighter day is coming.

Dr. Edwards: I want to say that I hope to see the time in the near future when we will have ample facilities for taking care of tuberculosis. That we will have room at the State Institutions for both colored and white patients, and that in the South we will have separate institutions. I think in the very near future we will have such.

Closing Discussion, Dr. Brooks: I think if you will ask any man who has ever done any tuberculosis work he will tell you his greatest difficulty is establishing an intelligent understanding between himself and the patient. It does not matter if this patient is a lawyer capable of becoming a Supreme Court Judge, even down to the illiterate. You talk to him in a foreign language and he goes away from you without understanding the basis upon which fear and knowledge rests. This has been my experience, and a very

painful experience. At times it would seem that we get brilliant results. We flatter ourselves that we have a patient we are going to restore, and in that time he gets away from us. He does not like these fundamental principles of science. It must be taught to the children in the schoolroom. I insist that this scientific information about communicable diseases must be a part of your child's course. He must study this as he studies grammar and English. He is supposed to get something of the nature of a disease, and something of its prevention and what his part of prevention must be, and you can't ever get him to understand that or follow it until you teach it to him. I have failed in my patients, and many times I have felt I was a failure all over, because I couldn't achieve anything except that my fellow-servant was doing it all, and if I dropped out he could do it far better than I; but he was doing nothing but patchwork. His work is constructive, and he must teach the race how to be strong, and he cannot do that until there is a line of communication between him and that race, because that race cannot know what he is talking about, and does not know.

I have gone away many times from a patient feeling that I was utterly helpless. I could not control that patient, and no one else could, because he could not talk with him. Let the school rooms teach the rudiments of science.

VENEREAL DISEASES—A PUBLIC PROBLEM.

The Physician's Responsibility for Their Control.

By Millard Knowlton, M. D., C. P. H.,
Director Bureau of Venereal Diseases, N. C. State Board of Helath.

THE PROBLEM.

A sense of public responsibility for the venereal disease problem is one of the by-products of the war. When faced with the necessity of utilizing the manpower of the nation to the limit in combat with a first-class military power, America soon recognized venereal disease as the most serious communicable disease menace to its military strength. Medical men have not forgotten that 5.4 per cent of the second million men called to arms had venereal disease when they reached camp. Thus the war brought the venereal disease problem to the front as a public problem.

Even in war time the venereal disease problem is essentially and fundamentally a civilian health problem. Five out of six of the soldiers suffering from venereal diseases were infected before enlistment. The others became infected by contact with the civilian population. Adequate preparation for the defense of the nation against future aggression requires careful attention to the venereal disease problem by the civilian communities. Any problem so closely related to the defense of the nation is a public problem.

Inasmuch as gonorrhea is looked upon as the greatest sterilizer, and syphilis as the greatest abortifacient, it behooves the people to take measures against the ravages of these diseases in order to maintain the birth rate that will give the best assurance for the future of the nation. An excess of births over deaths is necessary if a nation is to grow strong. France

is now suffering because of a low birth rate. Any factor that affects the birth rate as does venereal disease is a vital public problem.

During the war it was found that in a large munition plant employing 10,000 workmen, 68 per cent of the workers on the non-effective list each day were listed because of venereal diseases. Production among those so infected was found to be 33 per cent below normal. Facilities for treatment were provided, and 2,000 employees were treated during the year. Every man's output returned to normal after treatment was concluded and the man returned to health. The company estimated that the work was worth at least $150,000 per year in increased production. At this time of high prices whatever tends to retard production is a public problem.

Another factor of immediate public concern because it involves the expenditure of public funds is the relation of venereal diseases to dependency and defectiveness. How much of the State and local expenditures for the care and maintenance of dependents and defectives have been made necessary by venereal disease cannot be said. That such expenditure is far beyond the cost of prevention must be apparent to anyone who will give the matter a second thought. Indeed, when we consider the public charges in the alms houses and other institutions whose lameness, epilepsy, blindness, feeble-mindedness, insanity or other cause of dependency is due to venereal disease, we may well believe that the State would profit by taking measures to prevent these diseases, as did the munition plant, by providing treatment for infected persons. Thus it appears that when viewed from any angle the venereal disease problem is a public problem. Even from a clinical point of view, pay for the treatment of such diseases among the indigents must come from the public purse.

THE REMEDY.

Owing to the complicated and intricate character of the venereal disease problem, the remedy has not been one of easy attainment. Experience has led to the direction of the campaign against venereal diseases along three general lines:

1. Educational measures for the dissemination of information are regarded as fundamental for any kind of advancement under a popular form of government.

2. It is now almost universally recognized that effective measures against venereal diseases will include the repression of prostitution, which is the great source of infection. Prostitution is no longer to be regarded as a fixed part of the social structure or even as a "necessary" evil. As a commercialized institution its doom is sealed. The public will not permit a return to the old conditions.

3. That part of the attack against venereal diseases which is of most interest to physicians is treatment. It is by proper treatment that infected persons are rendered non-infectious. Thus, treatment is a matter of public concern and the physician who properly treats a case of venereal disease performs an important public service.

So much by way of introduction. I wish to use the rest of the time allotted to this paper in a discussion of the problem of treatment. I have no information or suggestions to offer concerning the methods of treatment.

I wish merely to make a plea for better treatment, and to suggest a plan whereby I believe that better treatment may be provided for patients in remote communities.

THE PHYSICIAN'S RESPONSIBILITY.

No one but a physician is qualified to properly treat venereal diseases. This is one branch of the healing art in which physicians have the monopoly. The osteopath, the chiropractor and the Christian scientist are constrained to withdraw from the field and leave the medical man in full control. This monopoly pre-supposes a responsibility and a better preparation for the discharge of their full duties that I now wish to plead with the physicians of North Carolina.

Medical men are disposed to take venereal diseases somewhat more seriously than formerly, but many physicians still do not care to treat such cases. To be sure, there are unpleasant features about this work; but the physician's responsibility cannot be fully discharged by giving indifferent or careless treatment. The physician owes it to both his patient and the public to see that the best possible treatment is given.

All physicians will agree that patients should not attempt to treat themselves and should not rely upon drug-store treatment or treatment by quacks. In our propaganda designed to turn patients away from self-treatment, the counter-prescriber, and the quack, it is constantly urged that proper treatment can be given only by a qualified physician who can examine the patient carefully in order to determine what treatment is needed. Sometimes the busy doctor makes an unfavorable impression upon the patient by failure to live up to our promises concerning a careful examination. A case in point is that of a North Carolina woman who was infected with gonorrhea by her husband upon his return from the army. Before treatment was completed it became necessary for her to move to another city, where she sought to continue treatment under a physician's care. Her experiences in that connection are given in the following extracts from a letter recently received in our office:

"I have tried three doctors, and the one who was most recommended, Dr. ————, merely asked me what treatment the doctor in ———— had given me, and told me to continue that treatment. He did not say for how long, nor did he offer to make an examination. According to your pamphlet and letter such indifferent advice is unsatisfactory. This doctor did not even ask me to come to see him again. He acted as if he were wholly incompetent to give advice in this case."

"I am very much concerned about my condition, and I want to be helped. I have already spent a large sum of money for medicines, doctors' advice, etc., and a great deal of time in treating myself, and I think I am entitled to some results for my outlay of time and money. Why cannot the law require doctors to be more competent? I think any doctor as negligent as the one I have mentioned should be reportable by the patient. A case like this is too serious for a doctor to be careless about."

The foregoing statement by a woman of education and refinement merits serious consideration by physicians. If the medical profession is to maintain its prestige with the people and continue to enjoy the fullest public confi-

dence, it is highly important that physicians meet the increasing demands of a more fully educated public.

In meeting these requirements only two courses are open to a physisian when a venereal disease patient applies for treatment. These are either to give the best possible treatment himself or refer the patient to a physician who will give the best possible treatment according to modern methods. Remembering that each uncured case of venereal disease is a source of danger to others, the physician can perform his full duty to himself, his patient, and the public only by pursuing one or the other of these courses.

The public interest requires that all patients suffering from venereal disease be properly treated, no matetr what their race, color, or social position may be. Venereal diseases, like other communicable diseases, know no racial boundaries. Where different races of mankind are intermingled it is to the interest of each race as a matter of racial self-preservation if from no higher motive to have venereal diseases properly treated in members of the other race. The physicians of North Carolina have it within their power to see that proper treatment is given to all citizens of the State suffering from venereal disease.

I am not asking physicians to work without remuneration. Most venereal patients can afford to pay at least a reasonable fee for treatment. In the few instances where a person suffering from venereal disease in communicable form is really indigent, it is simply a matter of self-protection for a community to provide treatment at public expense. The State Board of Health will provide arsphenamine free for the treatment of indigent syphilitics who are infectious, provided the community or a big-hearted doctor will see that the drug is properly administered. In the larger communities the most convenient way of providing treatment at public expense is by means of clinics. In the smaller communities some modification of the clinic arrangement may be necessary.

I have urged that each physician either give the best possible treatment or refer his cases. Perhaps you are asking to whom the cases may be referred. It is realized, of course, that only the larger cities can support specialists. As North Carolina is a rural state, only a small percentage of its population live in or near the larger cities.

To the end that rural medical service may be improved, it is proposed that the medical men of each community provide at least partial specialization in medical service to that community. This will be possible through concerted action. As a first step, let the physicians in each county get together, talk over the proposition and select from their number one who is willing to make special preparation by study and equipment for the proper treatment of venereal diseases. Of course, he cannot hope to limit his practice to this line in a small community, but by partial specialization he can become an authority on the matter for his own community to whom patients may be referred or who may be called in consultation in difficult cases. The man who thus qualifies himself for the better treatment of venereal diseases should be selected by the board of county commissioners to treat indigent patients. He should be recognized by the medical profession of the community in such measure as to make worth while his expenditures in time and money for special training and equipment.

The plan here proposed would result in advantage to both the medical profession and the public. Thus it would accord with a principle that is now happily appearing more clearly in the vision of far-seeing medical men. This principle is that the ultimate interests of the medical profession are parallel to the best interests of the public in medical matters. While recognizing the fact that public interests are paramount to those of any class or group, medical men will do well to remember that the doctor serves himself best by serving others.

The gist of the whole matter is that the level of medical practice with respect to the treatment of venereal diseases should be raised to as high a point as possible in all communities of the State. This requires a specialization which comes as a natural process in larger communities. In smaller communities the same end can be reached in lesser degree perhaps by a process of partial specialization encouraged and stimulated by the medical profession. It falls to the lot of medical men to prevent the spread of venereal diseases by the proper treatment of existing cases. For the best results united co-operative efforts for encouraging specialization are required

Here I beg to leave the matter in the hands of the medical men of North Carolina, in full confidence that they will rise to the opportunity for public service and take active measures to provide better treatment for venereal disease cases in all parts of this State. Let me urge again that united effort and co-operation are necessary. If we doctors do not hang together, the public may give us a chance to hang separately.

THE STATE PROGRAM FOR VENEREAL DISEASE CONTROL

By Millard Knowlton, M. D., C. P. H.

Director Bureau of Venereal Diseases, N. C. State Board of Health.

The venereal disease campaign that has been pushed so vigorously for the past two years has been an experimental excursion into an unexplored realm. Prodded by war necessity, the country and the various states have undertaken to follow the vision of a few forward-looking men. The course has led through bramble and thicket, and we are not yet out of the woods, but slowly some of the fundamental things are emerging from the chaotic thought surrounding the subject.

Before the war, efforts for venereal disease control were spasmodic and intermittent. Here and there health authorities feebly called upon doctors to report their cases by number, and a few state legislatures were beginning to consider measures dealing with the problem. The chief energies focused on the subject had been expended in propaganda by a few voluntary organizations. Thus, while the preliminary work of gathering and disseminating information and formulating speculative and theoretical plans had been under way for some time, there had been little practical experience in applying such plans to the actual problem of venereal disease control.

Accordingly, those of us who plunged into venereal disease work on a wave of war enthusiasm found a field unknown, to be cultivated by methods untried. In proceeding from the known to the unknown, it was but natural that the course adopted should be analogous to that pursued in the prevention of other communicable diseases. Experience soon demonstrated, however, that there were certain fundamental differences between venereal diseases and other communicable diseases that must be taken into account.

In the first place, all cases of venereal disease are not in communicable form, and, therefore, all cases are not subject to control by administrative procedure of a health officer. Thus, a case of syphilis of the central nervous system may give a positive Wassermann of both blood and spinal fluid yet not be a case to come under the jurisdiction of a health officer, for the reason that evidence cannot be produced to show that it is possible for such a patient to convey the disease to others. From a public health point of view it is necessary to make a clear distinction between a case that is infectious and a case that is not infectious. The health officer is interested in a case only so long as it is infectious and capable of transmitting infection to others. It is the health officer's business to prevent such transmission of infection. However much need there may be for a continuation of treatment until a clinical cure is effected, the health officer is officially concerned with treatment only until the patient becomes non-infectious. In making an examination of a patient to determine whether or not such patient is a menace to the public health, the health officer must determine two things: First, the presence of venereal disease! and, second, whether or not the disease is present in communicable form. Action to protect the public health is based on the presence of disease in communicable form and not on the presence of disease *per se*.

Another and still more important difference between venereal diseases and other communicable diseases is that in the case of venereal diseases not all patients suffering from such diseases in communicable form are menaces to the public health. In fact, very few patients will endanger the public health if properly instructed in methods of prevention unless, as in some instances, their occupations are such as will endanger others by the ordinary contact of daily life. Whether or not such a patient is a menace to the public health depends ordinarily upon his sex conduct. This introduces a factor which makes the venereal disease problem at once the most complicated, the most difficult, the most intricate and in some respects the most important of all the public health problems.

The bearing of these differences between venereal diseases and other communicable disease upon administrative measures to be taken for the protection of the public health is apparent upon a moment's reflection. Obviously, those cases that most concern the health officer are those that are most dangerous to the public health. Thus reporting regulations that will result in having brought to the health officer's attention only those cases of venereal disease that are dangerous to the public health will save his time in the investigation of non-infectious cases. If such regulations can be made to serve as a filter to catch only infectious cases, the public health will be protected as well as if the health officer had to examine all patients suffering from these diseases. This end is attained by permitting the physician to report patients not dangerous to the public health by number without disclosure of names, and requiring the name and address to be reported only in case the physician thinks the patient should come under a health officer's supervision for the protection of the public against his infection. Reports by number are as useful for statistical purposes as reports by name.

Likewise, the invoking of quarantine as a measure to protect the public

health will depend upon conditions outside the existence of venereal disease. In the majority of cases quarantine will not be required. Only in those cases that cannot be trusted to so conduct themselves as to avoid exposing others to infection will restrictive measures be necessary.

On account of the very complex factors involved, the method of carrying out quarantine procedure in venereal diseases must of necessity be different from the method of carrying out such procedure in other communicable diseases. In scarlet fever, for example, every case is a menace to the public health, and, therefore, all cases are equally subject to quarantine. In such cases, quarantine can be carried out by isolation in the home. Most people wish to do the square thing, and the opinion of the neighbors is a powerful factor in preventing attempts to evade quarantine regulations when the house is placarded. In the case of venereal diseases, however, law-abiding, responsible citizens who have had the misfortune to become infected may be trusted to avoid spreading the disease to others if they are properly instructed. Accordingly restrictive measures to protect the public health may with safety be limited to those who would not carry out instructions, and who could not be trusted to avoid exposing others to infection while under treatment. Chief among this group of irresponsible people are the pimps and prostitutes. In applying quarantine to such characters isolation in the home has not been found to be effective Forcible detention is necessary for the adequate protection of the public health. It is for this reason that the law authorizes quarantine in jail if no other suitable place for quarantine is available.

So much for the rather technical public health side of the problem. There are other aspects of the problem in its larger relations that extend beyond the field of public health, and interlock with the duties of other officials and functions of other departments of government. While the treatment of existing cases is now recognized as a primary necessity in order to render them non-infectious, and thus not dangerous to the public health, it is clearly seen that treatment alone without taking steps to stop the source of supply is a good deal like the building of a hospital at the base of a cliff to care for those who fall over instead of building a fence at the top to prevent them from falling. In the one case the hospital is a humane measure of cure, but it is more expensive and less effective than the fence as a measure of prevention. In the other, the necessity for treatment to render patients non-infectious would be greatly lessened by effective measures for the repression of prostitution, which is the source from which venereal disease is obtained and passed on to innocent victims. The repression of prostitution is primarily the duty of peace officer and court officials, but the law recognizes the relation of prostitution to the spread of venereal disease by requiring health officers to co-operate with other officials in performing this function. Such a broadening of duties greatly extends the horizon of the health officer and requires him to recognize and grapple with social problems as never before.

Of special importance in the promotion of any movement requiring public support in a popular government are those activities concerned with the dissemination of information usually designated as educational work. In the venereal disease campaign educational work is particularly difficult

owing to the relation of venereal diseases to sex conduct and the delicacy of the questions involved. Here again the things that must be done extend beyond the field of public health, this time into that of the school. Instruction concerning the contribution that sex makes to life and the physiology and hygiene of reproduction is distinctly an educational activity rather than a health activity. The health authorities are taking the initiative in this work because the educational authorities are not yet equipped to do so. The kind of educational work concerning this subject that belongs definitely to the health authorities is instruction concerning the ravages of venereal disease, and the methods of cure, prevention and control. When the period of experimentation is over and the functions of the different branches of government with reference to this problem are more perfectly adjusted, the educational work will be divided between the health authorities along these general lines.

The provision of recreational facilities as a preventive measure against venereal disease is mentioned here merely for the sake of completeness. While this line of work is important, it is not a health department function.

Thus, the huge, country-wide experiment that has been carried on for the last two or three years, has resulted in fixing certain definite lines of activity as fundamental to any complete program of venereal disease control. These may be enumerated as follows:

1. Treatment of existing cases to render them non-infectious.
2. Administrative measures of control by the health officer.
3. The repression of prostitution, for the purpose of cutting off the supply of infection.
4. Educational measures directed toward giving higher standards of sex conduct and disseminating information concerning the ravages and prevention of venereal disease.

These, then, are the principles underlying venereal disease control. In carrying out this program in North Carolina, clinics for treatment have been established in nearly all the larger cities and an active campaign is now being conducted among physicians to stimulate interest in the better treatment of venereal diseases.

The educational work is being developed along approved lines by means of lectures, exhibits, motion pictures and an extensive distribution of pamphlets. Lectures are arranged for men and women separately, and the work includes a special educational campaign among negroes by a colored physician. More than a quarter of a million pamphlets have already been distributed.

The repression of prostitution by officials of local communities has been encouraged through the collection and presentation of information concerning vice conditions. Responsibility for this line of work has recently been taken over by the Inter-Departmental Social Hygiene Board, who are furnishing personnel for a division of protective social measures that will soon be functioning.

The final working out of the program of venereal disease control will include administrative procedures for handling individual cases dangerous to the public health. Among these procedures will be that of quarantine,

for which ample powers have been granted health officers by the Legislature. The Supreme Courts of the States of California, Iowa, Kansas, Nebraska, Texas and Washington have sustained laws or regulations conferring powers of quarantine for venereal disease upon health officers. There have been no adverse decisions. Quarantine for venereal disease is thus placed on a sound legal basis. A health officer's order of quarantine is not subject to judicial review, unless fraud or bad faith is alleged. A person held under quarantine cannot be released on bail. Thus a health officer has more power than a judge of the court.

The greater the power the greater the dignity of the office. When the public comes to realize that such great powers are vested in health officers, the health officer will be given greater public recognition and appreciation. If the power vested in an officer be considered as indicating the importance of the office, then the whole cause of public health will be advanced by gaining such public recognition through exercise of the quarantine power.

AN IDEAL VENEREAL DISEASE CLINIC ORGANIZATION.

By Raymond Thompson, M. D.,
Of the Crowell Urological Clinic, Charlotte, N. C.

It is the aim and purpose of the venereal disease clinic organization to reduce the prevalence of the venereal diseases as much and as rapidly as possible by the detection and treatment of all carriers not otherwise under treatment. There must therefore be a thorough campaign of medical treatment, combined with the application of all measures that experience has shown to be helpful, such as education, law enforcement, follow up work, etc.

1. Organization of Clinic: It is the purpose of the United States Government, State and County authorities, to establish venereal disease clinics, not only to treat patients who are infected, but to inform the people of the seriousness of these diseases and prevent as far as possible the infection being transmitted to other persons. The clinic should have the undivided support of the local board of health, local medical profession, city officials, Chamber of Commerce, the press, religious bodies, druggists, and all other organizations interested in public health and social hygiene. Literature prepared by the United States Public Health Service regarding sex diseases, and how to obtain proper treatment, should be freely distributed. Strict discipline should be maintained among the Personnel and Clinic. The officers should not forget the advantage in promoting a hopeful and inspiring atmosphere in connection with the scientific treatment of venereal diseases.

2. Staff or Personnel: Two physicians, one female nurse, one male nurse, one female social worker, one clerk.

The physician should be well trained in this special work. One physician should be the director of the Clinic, and the other the assistant director. The physicians should direct the diagnosis and treatment of all cases, as well as the general management of the Clinic.

The female nurse should assist at the examination and treatment of

female patients. After thorough instruction she may give the simpler treatments.

The male nurse or attendant should assist with the examination and treatment of male patients.

The social worker should see the patients on their first or second visit and investigate their social relations and home conditions. It will be her duty to bring in members of the patient's family who might be infected.

The clerk should keep a complete and accurate record of all the cases and work connected with the clinic.

Follow up Staff: One of the greatest aids to the Venereal Disease Clinic is a well organized follow up system. The social worker should have charge of this department. The female nurse and male attendant should assist in locating patients who fail to return for treatment. The nurse will have the advantage of having seen the patients in the Clinic and will be capable of impressing on them the importance of taking treatment.

Location: The Clinic should be convenient and easily accessible in location. There should be not less than four rooms. It is necessary to have separate waiting rooms for male and female patients. The races should be separated or not—according to local customs. It is best to have separate treatment rooms for gonorrhea and syphilis.

Equipment: The equipment recommended by the United States Public Health Service is as follows:

1 operating table.
1 to 4 cheap wooden treatment tables.
1 instrument cabinet.
2 two-piede sterilizing outfit.
2 waste receptacle buckets.
1 office treatment stand.
1 Salvarsan outfit, with two 250cc glass containers, rubber tubing.
2 two-way stop cocks.
2 300 cc glass-stoppered mixing cylinders, graduated.
1 dozen Schreiber thumb needles.
1 Record syringe, 5cc.
6 Record syringes, 1cc.
3 Record syringes, 2cc.
2 dozen 1¼-inch No. 21 steel needles.
1 bandage scissors.
3 knives.
6 haemostats.
2 pair scissors.
2 pair tissue forceps.
1 needle holder.
1 dozen assorted needles, catgut, silk, etc.
3 dozen finger cots.
1 dozen pair rubber gloves.
1 Janet syringe, 100cc.
1 dozen olivary bougies.
1 dozen French olivary bougies.

1 dozen Porgas olivary bougies.
6 filiform bougies.
6 filiform bougies, whalebone.
1 dozen Gonley's bougies.
1 Valentine irrigator.
1 Keyes-Ultzmann urethral syringe.
6 Fowler sounds.
12 Van Buren sounds.
6 female catheters.
1 dozen assorted rubber catheters.
1 Dickinson female double flow catheter.
1 cysto-urethroscope.
1 urethroscope.
1 Jollman dilator.
1 vaginal speculum.
1 uterine forceps.
6 sediment glasses.
1 Bausch & Lomb microscope, with Nos. 1-3, 1-6 and 1-12 lenses.
1 Bausch & Lomb dark field illuminator (full equipment, with two extra boxes of carbon).
10 dozen 100cc bottles.
10 dozen 180cc bottles.
2 pounds corks.
3 glass rods.
2 basins with covers for sterilizing purposes.
1 Bunsen burner.
5 feet rubber hose.
500 test tubes, regular size.
3000 wooden tongue depressors.
2000 wooden applicators.
3 card-index system:
A—Patients by name and number,
B—Patients by dates and names,
C—Patients by diagnosis and number.
History cards.
1 platinum loop.
1 dozen 2-liter flasks.
1 dozen 1-liter flasks.
10 pounds hydrogen peroxide.
5 pounds phenol.
5 gallons alcohol.
2 pounds potassium permanganate.
5000 formin tablets, 5 gr.
1 pound iodine crystals.
5 pounds thymol iodid.
1 ounce silver nitrate.
1 pound calomel powder.
10 pounds 1 and 2-inch gauze bandages.
500 yards surgical gauze for dressings.
20 pounds sterile absorbent cotton.

10 gallons Mistura copaibae compositus, N. F.
2 pounds corrosive sublimate tablets.
2 pounds argyrol.
2 pounds protargol.
1000 glass slides.
1000 cover slips.
Cedar oil.
5 pounds mercury salicylate, 1-2 to 1 per cent in sterile liquid petroleum, made up in 100cc, wide mouth, shallow bottles.
50 pounds Unguentum hydrargarum, U. S. P., 50%.
1000 ointment boxes, 1 ounce.
Desirable additions:
High-pressure steam sterilizer,
Hot-air sterilizer,
Small incubator.

Clinical Hours: The clinic should be opened daily, except Sunday, for as long a period as necessary to properly treat all cases. The female patients can usually attend early afternoon hours best—three to five o'clock; male patients later hours—five to seven. Unless you have separate waiting and treatment rooms it is better to have female patients come early and male at a later hour. The Clinic should always open promptly at a regular hour and close at a specified time.

Examination of Patients: The first examination should be made by a physician, a complete history, clinical findings and routine laboratory tests made and recorded. The patient should be treated "humanely" and given intelligent information regarding the importance of proper treatment.

Records: Accurate records on forms provided for this purpose should be kept of all cases. These records include history, symptoms, physical signs, clinical findings, laboratory reports, special examinations, treatment at each visit, and final results. Report of social worker, visiting nurse and other reports dealing with the case should be recorded.

Laboratory: There should be a laboratory conveniently located, in competent hands and fully equipped to make all desired examinations. The bulk of laboratory work will consist of dark-field examinations, Wassermann tests, smear examinations and urinalysis.

Regulations Regarding Standard Treatment: The clinic should follow as nearly as possible the standard adopted by the U. S. P. H. S. and State authorities.

Hospital Cases: It is necessary to make arrangements with a local hospital for taking care of patients needing hospital treatment. There will be a great many minor operations in addition to medical cases which require institutional care.

Management of Patient: If the physicians will assume the attitude that they are treating patients, with an infectious disease, and not *outcasts,* who should be damned on account of having venereal disease, the patients will feel that you are doing what is best for them and at least a great majority will gladly return for treatment.

THE IMPORTANCE OF LABORATORY FACILITIES FOR A VENEREAL DISEASE CLINIC.

By Dr. L. C. Todd, Charlotte.

In the organization of the State Venereal Clinics under the direct supervision of the United States Public Health Service, the latter has emphasized the need of the laboratory as an integral part of the local clinic. In the case of the smaller clinics, whatever laboratory work that is done locally is usually taken care of by the director or his assistant together with the State Board of Health laboratory assisting by doing the serological work. This will be accomplished by establishing necessary laboratory facilities for doing a complete urinalysis, for examining smears and for making dark-field examinations.

Where the number of cases cared for increases to such a point that the medical workers are obliged to neglect even the simpler laboratory procedures, a much larger volume of work of a more prompt and more accurate nature will be accomplished by establishing the necessary laboratory facilities in the hands of a qualified laboratory technician as a part of the organization. The number of laboratory examinations can then be increased without taking time from the examinations of new patients or from the case of those already under treatment. Thus the clinical members of the staff may be entirely released to devote their time to their outlined work, and they will not be tempted to forego the advantages of what the laboratory has to offer in the way of a corroboration of their diagnosis or as a guide to their treatment because they may be over-burdened with other work.

To be of most service to the clinician, the laboratory should be as conveniently located as possible, so that its function as a diagnostic aid may be called into use without delay and its place as a guide to treatment may be always filled.

Upon admission, the new patient's examination should include routinely the collection of a blood specimen for the Wassermann test. Whether the entrance examination reveals a clinical case of lues or not, this procedure may add evidence to the clinical diagnosis and may frequently, in a clinic of this nature especially, draw attention to the fact that the patient has a latent luetic infection. Of the entrance blood Wassermanns of the last 1090 cases admitted to the local clinic, 482, or 44 per cent, were found to be positive. Among the cases reported negative were many early primaries, but among the positive cases were many coming to the clinic because of an acute gonorrhœal urethritis. Thus attention was drawn to a latent syphilitic infection in the latter group.

All penile sores are to be examined particularly with the view of proving whether or not the lesion is the initial site of a syphilitic infection. When we recall that only about 36 per cent of blood Wassermanns are positive by the end of the first week following the appearance of the chancre and about 60 per cent are positive by the end of the second week, we are impressed with the importance of using every effort to establish a diagnosis by the earliest means at our command—i. e., the dark-field examiantion. Repeated thorough dark-field examinations are made in search for the spirochæta pallida. No local applications except non-spirochæticial moist

dressings should be used until an earnest search has been made and the absolute diagnosis arrived at or the quest abandoned. Only then should active treatment be instituted. Every physician coming in contact with patients exhibiting penile sores or suspicious extragenital lesions should consider it his bounden duty to arrive at a diagnosis as early as possible, and especially before the positive blood Wassermann gives evidence of a generalized infection. Before such generalization takes place treatment more frequently results in a prompt cure. Failure to find the organism has little value in proving the lesion non-syphilitic. Chancroid is so frequently complicated with syphilis that a diagnosis of pure chancroid should not be made until a fair attempt has been made to determine the presence of syphilis. When the dark-field search is fruitless, weekly Wassermann tests should be made for six weeks and treatment instituted immediately if indicated—at the same time repeating the blood test to further corroborate the positive finding.

Routine smears—urethral, cervical, vaginal, etc., are indicated on all new admissions, chiefly for the establishment of the diagnosis, but also for the observation of the stage of the disease and for the selection of the appropriate treatment. Many syphilitic patients should also have an examination made of the prostatic secretion to discover the latent cases of gonorrhœa.

All patients to receive arsphenamine should have a complete urinalysis done at the commencement of their treatment, and their urine should be examined for albumin and casts preceding each subsequent intravenous injection—occasionally during their mercurial treatment and at such other occasions as their signs and symptoms indicate. By this means there will be avoided the possibility of super-imposing a severe arsphenamine intoxication upon a patient already suffering from acute nephritis.

The influence of specific treatment upon the Wassermann reaction of the blood should be watched during the course of treatment—a test being made a month after completion of the first course of mercury and subsequent tests being made at the interim intervals during the various courses of the treatment. The blood test may prove a valuable guide to further treatment, but it should be kept in mind that in a certain number of cases serological cure is impossible.

In the gonorrhœa cases, examination of smears aids the clinician to follow the progress of treatment—negative urethral and prostatic smears being some of the usual criteria for determining the patient's fitness for release.

In the follow-up management, syphilitic patients who have been treated in the clinics are told to report back at stated periods for physical examination and a blood test. At first these examinations are made at frequent intervals, keeping in mind that a single negative reaction means little but that the blood should remain negative over a period of months. Later the intervals may well be lengthened and the patient be regarded as free from the necessity of further observation or treatment when examination and Wassermann tests have been negative at intervals of two months from a period of at least a year. Most clinicians would state that a routine lumbar puncture for the purpose of examining the spinal fluid for evidences of central nervous system involvement should be done at a suitable time during

the treatment and before dismissing the patient. This should be the procedure where the clinic has hospital facilities. The follow-up care of the gonorrhœa patients also necessitates their reporting for examination, including examinations of smears, at intervals outlined by the physician.

The chief value of having laboratory facilities close at hand, as a part of the clinic, will lie in the ease and readiness with which the desired examination can be made, leaving the clinical members of the staff free to handle their own numerous duties. The laboratory's aid will make for more exact and complete diagnosis and will place the treatment upon a more direct course and the subsequent management upon a more logical basis.

GONORRHOEAL COMPLICATIONS IN THEIR RELATION TO INFECTIVITY.

By Dr. A. F. Toole, Asheville.

From the preceding papers of this symposium you have doubtless caught the angle of today's viewpoint on venereal diseases. It is an angle which gives us a focus not on the individual patient's symptoms, not on the pathology and treatment of the case itself, but a focus on the infected patient as a carrier of disease and as a menace to the uninfected. Gonococci and spirochaetes hit the individual, but tend to rebound toward the general public, thereby creating a health problem; so, of course, with every infectious disease.

Prior to the time when preventive medicine began to take on some of its present and promising activity, gonorrhœa and some of its complications were handled in almost numberless papers, from predisposing causes to prognosis, with a maximum of attention to pathology and treatment, but a minimum—too often—toward infectivity. My brief remarks on gonorrhœal complications will therefore be confined to such as conform to the above angle.

As a matter of fact, the complications of the disease outrank in importance the disease itself, in that the problem of prevention revolves around them instead of around the simple infection. Indeed, that all-too-rare occurrence—an acute uncomplicated gonorrhœa—is relatively a small problem, since we have here to deal merely with a surface infetcion of the mucosa of the anterior urethra, easily controlled, easily cured, and of brief duration. Its victim is relatively innocuous as a spreader of disease, since he is inhibited partly through his own discomfort, partly through a variable and limited restraint imposed by his conscience and sense of decency, from inflicting his visible and recognized infection upon others. Exceptions to such exercise of moral inhibition are of course numerous; perhaps, if or when alcohol is introduced as a factor, almost as numerous as the cases cited for the rule; but beyond doubt the real male infector is he who carries a chronic gonorrhœa; and a chronic gonorrhœic is merely one whose acute gonorrhœa has been attended by one or more complications. Or we may state our equation as follows:—Complications produce chronicity, and chronicity multiplies new infections.

The crux of our problem, therefore, is the prevention or detection of complications. These may develop insidiously; once developed, they are

often unrecognized by the patient and far too often undiscovered by his medical adviser. Yet recognition, or discovery, or diagnosis, of them is always possible; which is fortunate, since such recognition is essential to that particular treatment which alone can render the quondam carrier non-infectious.

In what ways are we to handle this problem of complications? I shall suggest a few, with brief remarks on each as I proceed:

First.—Continue our attack on the patent or proprietary nostrums, and on the counter-prescribing druggist. There was a time when some weakly plausible arguments were advanced in extenuation; but if ever there did exist any justification for this abuse, these arguments are scarcely valid now. I do not believe there is any other agency so potent in the production of gonnorrhœal complications and in their perpetuation. Nor is there anything which so spreads and fosters the untruth as to one mode of treatment being applicable to all stages and kinds of gonorrhœal infection.

Second.—Anything which will discourage or minimize the above practice will encourage the habit of coming early to the doctor or clinic for treatment, before complications have set in. As it is, the average gonorrhœic is inclined to hold the doctor in reserve as a last resort; (a compliment —if such—too often undeserved.)

Third.—Watch closely and examine systematically for complications during the acute stage. Subjective symptoms may be slight or absent, and the onset of complications—even of prostatitis—may be (as said above) insidious. Gently examine the prostate at intervals throughout treatment; employ the sound or the dilator at least once on the conclusion of all acute or so-called sub-acute symptoms, and where possible inspect the supposedly healed urethra through the urethroscope.

Fourth.—In every chronic case diagnose the cause of the chronicity; that is, localize the focus or foci of infection. This should always be the first step; in fact, it is the only logical step. Merely to change the patient's injection is either laziness, or, if possible, worse. You may be sure that his morning drop is not the outward expression of a single gonococcal growth on the surface of his mucosa. The main colony of germs has gone into some retreat; and one might as well use a gargle for pulmonary tuberculosis, as to temporize by shooting in their general direction. The job is to find them, and it is not so hard a job when undertaken systematically.

Such search would most frequently reveal chronic prostatis as the underlying obstacle to recovery; next in frequency would one find infected follicles along the anterior urethra, and next a localized thickening of some portion of the urethral wall,—in effect a stricture, even though of minor degree. I believe one or more of the above three conditions would account for fully 90 per cent of our cases of gonorrhœal chronicity.

Space forbids any discussion here of diagnostic procedure; that I can leave to the text-books; the point of emphasis just now is the matter of careful search for the offending focus.

Fifth.—The fifth and the naturally succeeding sub-topic is the application of such particular treatment as will rid the focus when found of gonococci. Emphasis on this consists of course in repetition of the truth that

one must go after each individual condition with special aim and method. The way to cure a prostatis is not the way to sterilize the anterior urethra. True, this is indeed obvious; but it is too often obvious theory instead of practice.

It does, I will admit, call for some degree of equipment and skill heretofore delegated to the all-time urologist; but with equipment and skill sufficient to handle the average case can be fairly easily acquired. One must learn the feel of a normal and an abnormal prostate, must learn the appearance of diseased prostatic secretion as seen under the microsope, and become familiar with the appearance of the healthy and the diseased urethra; the possession of sounds is far more common than is skill and gentleness in their use; and a Kohlman dilator, if employed with a due regard for its power to do damage when handled recklessly, is a valuable adjunct to the armamentarium.

And just here let me assure you that careful diagnosis and proper treatment pay, in every sense of the word. For even those patients seemingly most ignorant are rapidly learning to distinguish between the old shot-gun, hit-or-miss modes of treatment, and treatment which they can see is aimed at their own individual troubles. This is daily evident in the clinics; in fact, I must say that taking it all in all, the laity has responded more keenly to the nation-wide propaganda against these diseases than has the profession. You may be certain that for every chronic gonorrhœic coming to your office there is a little crowd of boon companions on the invisible sidelines watching the game, and keeping their eyes on that morning drop; if you win, the procession will file in; if you lose, the next gonorrhœic will be a straggler.

But careful diagnosis and proper treatment will pay of course in the best sense through the satisfaction gained in helping to refute the old fallacy which claims that gonorrhœa is incurable, and through lessening the spread of the disease by changing a patient from a carrier to a sexually sound citizen.

SUMMARY: By way of repetition, let us say:

(1) That gonorrhœa is spread by the victim of the chronic form thereof;
(2) That this chronic stage depends upon the development of some complication during the acute stage;
(3) That to lessen the occurrence of complications, we should
  (a) preach early medical attention,
  (b) fight nostrums and prescribing drug-stores,
  (c) closely watch acute cases for complications;
(4) That to properly attack complications when chronic, we should
  (a) locate the infected areas of the urinary tract, and
  (b) direct specific treatment against these foci.

THE DIAGNOSIS AND TREATMENT OF SYPHILIS.

By C. O. ABERNETHY, B. S., M. D., Raleigh, N. C.

I have been asked to say a few words upon the diagnosis and treatment of syphilis. My excuse for doing so is the following case reports:

CASE (1)

Mr. J. H., (white) 40 years old, married, came in my office February 15, 1920. Gave history of having had little blisters around margin of foreskin eight weeks prior to above date. A doctor gave him some bichloride of mercury for a wash and told him "it would not amount to anything." Examination showed a condition of phimosis, with inflammation and ulceration of foreskin and glans, due to using too strong solution. Hot applications reduced the swelling until I could get a dark-field, which was negative on two successive occasions. Wassermann four plus.

CASE (2)

Mr. R. M., (white) 22 years old, single, was seen by us February 14, 1920. He gave history of having been cut by barbed wire fence four months ago, which caused a sore on penis. Doctor gave him some dusting powder and *pills,* and sore disappeared. Examination showed hard knot on foreskin just at coronal junction. No abrasion. Wassermann negative. Saw him again February 20. Knot had increased in size, and finding slight abrasion demonstrated spirochetes with dark field.

CASE (3)

Mrs. W. W., (white) 30 years old, married ten months. No history of venereal infection. She had a generalized maculo-papular eruption over body, which had been present for over two months and had been variously treated. Examination showed general glandular enlargement and slight abrasion in lips of vagina. Spirochetes were demonstrated from abrasion. No Wassermann taken.

CASE (4)

Mr. W. D., (white) 26 and married, with one child four years old. He had "flu" in January, 1920, followed by an eruption which was treated for psoriasis. We saw him April 7, 1920, with generalized eruption which resembled psoriasis. He had mucous patches in mouth, from which the spirochetes were demonstrated. Wassermann 4 plus.

CASE (5)

Mr. B. S., (white) 22, single. Sore on shaft of penis two months ago. Had worn a "rubber" during exposure. Now has generalized eruption, but no abrasion except in folds of mucous membrane of anus, from which the spirochetes were demonstrated. Wassermann 4 plus.

CASE (6)

Showing the possibility of an early diagnosis. Mr. H. B., 21, single. Saw him April 12, 1920. Two small sores resembling herpes appeared on penis April 9th. Spirochetes demonstrated from these. Wassermann negative.

CASE (7)

Illustrates that sometimes a positive diagnosis cannot be made.

Mr. W. D., (white) 22 single, had a small sore on penis four months ago, and was given one antiseptic wash and ulcer cauterized with nitric acid. Saw him February 23, 1920, with ulcer about the size of half dollar on under surface of penis at junction of glans and prepuce. Spirochetes negative and Wassermann negative on several different occasions. We had

him to soak the penis in normal salt solution, and ulcer is slowly healing.

These cases were selected from my office practice, and not from the clinic, to show the awful tragedies that are being enacted every day in our midst among some of our very best people, and to show the importance of a thorough examination upon every patient, whether suspected or not. Case (1) was a "well-to-do" professional man and could not possibly have had syphilis. Case (2) had an injury to account for his having had a "sore." Case (3) was a married woman of the very best family, and therefore could not possibly have had a venereal disease. Case (4) of course had an eruption following "flu," which could be easily explained. Case (5) wore a "rubber" and could not possibly have become infected. While case (6) came for an early examination and "took his medicine." And case (7) shows the futility of nitric acid cauterization and strong antiseptics.

THE DIAGNOSIS OF SYPHILIS.

The most important point in the diagnosis of syphilis, like everything else in medicine, is the examination of the patient. Let us not forget that most of the mistakes in diagnosis are due to lack of examination and not to ignorance. And remember that the station in life of the patient makes no difference in the examination. The spirochete thrives in the palaces of the rich as well as in the hovels of the poor.

The only absolute diagnosis of syphilis is the demonstration of the spirochete pallida. This is usually a comparatively easy matter, provided the examination is thorough enough. Don't forget that you can often demonstrate the presence of the spirochete more easily in other abrasions of the skin and mucous membrane than in the chancre itself. Especially is this so in abrasions in the anus—mouth and throat. Get the habit of believing that every "sore" on a penis is spyhilis until you have proven it otherwise. And while you are proving it be sure not to use any anti-syphilitic treatment.

The Wassermann test is a very valuable adjunct in the diagnosis of syphilis and should be used in all cases. But remember that the test is late in appearing, usually being about one month, and that only 85% of them are correct.

The physical findings are exceedingly important. Let us all remember that we are still practitioners of medicine and that our judgment in all cases is important. Don't try to diagnose a chancre from a chancroid by the appearance, because the man does not live who can do this. Of course, there are certain differences between the two which makes one suspect very strongly one way or the other, but there are so many mixed infections that one can never be certain. But when a patient gives a history of having a sore, with general glandular enlargement, followed by an eruption at the regular time, be very slow to give up your diagnosis because the laboratory findings are negative.

THE TREATMENT OF SYPHILIS.

The only treatment of syphilis is the combined treatment; that is, using all drugs at your command that are indicated. Let us get away from the terms salvarsan treatment and mercurial treatment. One drug is just as

important as the other, and in the tertiary stage potassium iodide is as important as both.

I do not care what form of arsenic you use nor what form of mercury, but I do believe that saturation with both as early as possible is very important.

If you study the literature you will find almost as many different methods of using salvarsan and mercury as you have specialists. The method which we recommend is arsphenamine (which means any of the salvarsan or neo-salvarsan groups) once weekly and mercury during the same period.

In my office and clinic I use arsenobenzol on Saturday and salicylate of mercury on Wednesday for six weeks, then only the mercury once a week for six more weeks. Then I rest from all medication for six weeks. Have a Wassermann made and regardless of what it shows repeat the above twelve weeks' treatment. Then, to be certain that I am over-treating instead of under-treating, I recommend after a rest of two or three months another twelve weeks course. After this I recommend a Wassermann every three months for a year, and if they all are negative I discharge the patient as probably cured.

I think that it is generally conceded that the rest periods between the courses of treatment are very important due to the fact that the spirochetes either encapsulate themselves or acquire an immunity against a drug after given over a long period of time.

CENTRAL NERVOUS SYSTEM SYPHILIS; ITS INCIDENCE AND TREATMENT.

By Joseph A. Elliott, M. D., Charlotte, N. C.

Invasion of the central nervous system by syphilis has been recognized as a clinical entity for many years; however, there has been a great deal of discussion during the past half century as to the part played by syphilis in the more remote conditions, viz.: general paresis and tabes dorsalis. To Esmarch and Jessen belong the honor of first having discussed the relationship between general paresis and syphilis. These observers reported in 1857 three cases of paresis and syphilis in which they attributed the paresis as due to syphilis. In 1875, Fournier advanced the theory that tabes dorsalis was due to syphilis. Since that time these theories, so long as they remained theories, were discussed very exhaustively both pro and con.

With the advent of the Wassermann reaction, and its application to the spinal fluid, syphilis as the etiological agent was practically established. Many who admitted that these nervous disorders were syphilitic in origin were of the opinion that the pathology was due to toxins from remote foci and not to the invasion of the brain and cord tissues by the organism of syphilis. They therefore classified these conditions as parasyphilis. Not until 1912 did the light begin to dawn on this important question, when Noguchi demonstrated spirochætæ pallidæ in pathological sections taken from the brains of paretics. His excellent research stimulated others in their efforts to confirm his work, which has been done in many instances. Wile went a step further, obtaining small bits of tissue from living paretics, and demonstrated spirochætes both by dark field examinations and animal

inoculations. He then obtained spinal fluid from paretics, tabetics, and acute syphilitic meningitis cases. While he was not able to demonstrate the organism in the dark field examinations, he obtained positive animal inoculations in a number of instances from all classes of patients. Thus, it has been definitely proven that tabes dorsalis and paresis as well as syphilitic meningitis are due to active spirochætes localized in the central nervous system and not, as was once thought, to circulating toxins from a distant focal infection.

INCIDENCE OF CENTRAL NERVOUS SYSTEM SYPHILIS.

It is now generally conceded that tabes dorsalis and general paresis are not due to a sudden invasion of the central nervous system producing symptoms within a short time, but that the processes are slowly progressive ones and that infection takes place at the time of the general dissemination of the organisms from the primary lesion. It is no more likely for these marked changes to take place in a short time than it is for an aneurism to occur shortly after infection. The pathology of these lesions is one of slow progressive changes which are manifested first by lymphocytic and plasama cell infiltration, followed by a replacement fibrosis, which in turn causes the clinical symptoms.

During the early dissemination of the spirochætes there may be symptoms referable to the central nervous system which are due to acute inflammatory reactions and which in some instances are undoubtedly the precursors of the later manifestations of lues. A few years ago the number of cases of lues showing central nervous involvement was thought to be very small, due to the fact that patients were not carefully examined for such lesions, and only those with very obvious clinical manifestations, such as nerve palsies, hemiplegias, etc., were diagnosed. Today, however, the entire nervous system is very carefully examined in all cases of syphilis, besides lumbar punctures are done as routine by many syphilologists. These results of these more careful examinations have revealed amazing facts. Fordyce states that from 25% to 35% per cent of patients in the first year of infection show pathological changes in the spinal fluid, while Pollitzer believes more than half the cases during this period show changes. In 1915 Wile and Stokes made very careful studies on a series of early syphilitics, in which they had the fundus oculi, the eighth nerve, and a very careful neurological examination made by experts in each line of work. They found that from 60% to 70% of their cases showed some evidence of central nervous system involvement. A small percentage of cases showing no clinical evidence whatever show positive spinal fluid findings, which is a strong argument for the adoption of the lumbar puncture as a routine procedure.

TREATMENT.

While there are a few prominent syphilographers who still hold to the view that central nervous system syphilis can be treated successfully by intravenous and intramuscular medication, by far the largest majority have demonstrated to their satisfaction that intraspinous therapy is an essential part of practically every syphilitic's treatment showing such involvement. This has been demonstrated over and over again by first having failed with

the former and obtaining results with the latter. I shall not go further into the merits by which intraspinal treatment has won its place in our therapeutic armamentarium, but will take up the methods which are commonly in vogue today. There are three principal ones: 1. Swift-Ellis; 2. Ogilvie's; 3. Wile's. The procedure of Swift-Ellis is well known, and is, briefly, as follows: One hour after the intravenous administration of arsphenamine or neo-arsphenamine 40 c. c. of blood is drawn directly into a sterile centrifuge tube and centrifuged after the clot has formed. The clear serum is pipetted off and placed in the ice box over night. It is then heated in a water bath at 56°C for thirty minutes; 12 c. c. of the serum is diluted with 18 c. c. of normal salt solution and introduced into the lumbar portion of the spinal canal. The amount of serum may be increased at subsequent injections. The criticism that has been made of this method is based on the small amount of arsphenamine contained in the serum. To obviate this defect Ogilvie has modified the method by adding to the serum a specific amount of arsphenamine. A refinement of the Ogilvie modification has recently been published by Kolmer. He gives the patient 0.6 gms. of arsphenamine intravenously and immediately withdraws 25 c. c. of blood from the opposite arm and expels it into a 50 c. c. sterile centrifuge tube to which has been added 4 c. c. of a 10% solution of sodium citrate. This is agitated to mix the two fluids and centrifuged. To 10-12 c. c. of the clear serum is added from 1-3 to 1 mg. arsphenamine. The arsphenaminzed serum is then placed in a water bath at 56° C. for thirty minutes, following which it is ready for injection into the spinal canal. Wile's method consists in preparing the arsphenamine so that 0.1 gm. is dissolved in 30 c. c. of freshly distilled water. A lumbar puncture is performed in the usual manner, a 20 c. c. luer syringe is attached to the lumbar puncture needle by means of a rubber tube containing a glass window and a metal adapter. The syringe is then lowered below the level of the lumbar puncture needle until 10-15 c. c. of the spinal fluid is collected. To this is added two to three minims of the arsphenamine preparation and the mixture is stirred thoroughly with a glass rod. The syringe is then raised above the level of the needle and the arsphenaminized fluid is allowed to flow back by gravity. If the pressure is very high the piston of the syringe may be inserted and the fluid very gently forced into the canal.

COMPARISON OF METHODS.

The small amount of arsphenamine contained in the serum given by the Swift-Ellis method is not sufficient to produce an efficient therapeutic result. On that account Ogilvie devised his modification of this method, which has proven much more efficient and in many instances has given excellent results. Both methods, however, have the decided disadvantages of introducing foreign substances other than arsphenamine into the spinal canal, which to my mind is an important factor unless it can be proven that the serum per se has a definite therapeutic effect. Wile's method has the following points in its favor: First, the arsphenamine is diluted with spinal fluid, the most logical media to use. Second, the technique is simple. Third, intravenous and intraspinous treatments may be given within a few minutes of each other, thereby avoiding an hour's suspense on the patient's part and completing both treatments before there is time for a

possible reaction from the intravenous. Fourth, exact knowledge of dosage of arsphenamine. From the standpoint of technique, etc., this treatment seems to have decided advantages over the preceeding ones. If its therapeutic value compares favorably with the other methods, and it has in our experience, its simplicity makes it the method of choice.

While on Dr. Wile's service at the University of Michigan hospital I had the opportunity of treating, by his method, most of the central nervous system syphilis cases for a period of over two years, during which time several hundred cases were treated. The results were gratifying in over 90% of the meningitis cases and in a very large percentage of tabetics. Our results in paresis have been uniformly unsatisfactory. The acute cases, as would be expected, respond more rapidly than any other class of patients. The cell count usually comes down very rapidly with a corresponding clearing up of symptoms. Virtually all cases of early tabes show improvement under this form of therapy, whereas those with advanced nerve degeneration do not respond readily. This may be explained on the grounds that in early tabes many of the symptoms are the results of the inflammation present rather than degenerative changes, and under intraspinous treatment many of the organisms are killed off with a resulting disappearance of the inflammation and clearing up of symptoms. Once there is degeneration, no amount of treatment will repair the destruction that has taken place in the nerve structures; however, the process may be halted by treatment, and in many instances one is impressed with the marked improvement in symptoms. I recall a case that I treated 3 years ago that was suffering most severely with lightning pains and whose gait was markedly ataxic. After receiving a course of four intraspinous treatments, the pains entirely disappeared and his gait showed some improvement. One year later I again saw the same patient, and while he was still very ataxic he had been entirely free from pains during the interval. Just recently I had a patient with gastric crises who had received four intravenous arsphenamine during the two months preceding the onset of the crises. She was given an intraspinous treatment and within one hour the vomiting and pains stopped, although they had persisted for four days in spite of all other measures.

I shall now present a few lantern slides furnished me through the courtesy of Prof. Udo J. Wile of Michigan. These slides were made during the early days of his method of treatment, and I can vouch for the fact that even better results are being obtained at the present time with the same technique as employed then, but with a larger number of treatments.

DISCUSSION.

Prof. Udo.J. Wile, of the University of Michigan.

Mr. President and Members of the North Carolina Medical Society:

I wish to express my appreciation for the privilege of listening to these papers. The hour is so late that I hesitate to take up the very excellent paper of Dr. Knowlton, which was presented in a very clear cut manner. Those interested might be helped by studying the law we have in Michigan today. Michigan was a pioneer state in attempting to frame and enforce a law which in substance was a good law, and which should have the backing of the medical profession, but it has not It fails because of a few unfortunate features

which I think will be eliminated in the next session of the legislature. I am not qualified to discuss the papers on Gonorrhœa, but I would like to say a few words to you about the treatment of Syphilis of the nervous system. There is no treatment for syphilis which is not intensive. I am going to make the statement that the unfortunate effects that we see are a direct indictment against medical practice and medical treatment. There is no excuse for these venereal diseases or the conditions which result from syphilis, except that they are not treated correctly. The proper time to treat syphilis is the first week and first month of infection. That is the time the patient seeks your advice when the patient is from the standpoint of infection most dangerous. That is the time you have the best chance to treat him. It is unquestionably a fact that a few weeks of treatment in the first months of infection is the important thing. At the outset you deal with a local disease, which very soon becomes a general disease, and it is believed at this time that you have a chance of eradicating the disease. After the patient's treatment has been neglected or no treatment whatever given he is syphilizd, and then his chances for recovery are very slim. It is only as Dr. Elliott has pointed out, in the late years that we realize that the disease is braced with nervous infection. I think there is no simpler thing in the hands of the general practitioner than the examination of all patients for Syphilis. How else could it be? You have during the first three or four weeks an infection in the blood stream. The same blood that goes to the liver goes to the nervous system. It is at that time the patient is potentially a nervous-wreck. I have been so impressed with this, that a number of years ago I formulated a little rule which I have written about and told my students about, that the fate of every syphilitic is determined in the first stage of the infection."

If you are attempting to inject into the spinal canal any foreign substance, take the substance that is the least irritating and the smallest quantity. I have felt that the direct application of the minutest dose of Salvarsan is a method of choice, in cases of paresis or those in which you have a softening of the brain. I mean he is not the ideal case for intensive treatment, and you have only the right to expect that by certain treatment you may get rid of the worst. I have been using this method for six years, and I can truthfully say that I have never seen an early case of syphilis develop into syphilis of the nervous system. I have seen a number come back, but they have been made entirely well. For a case of paresis you need not wait 10 or 15 years. I have seen it develop 11 months after the infection. I am sure that we see more syphilis today, first because there is more syphilis, and, second, there are more diagnoses. In years gone by we waited for the patient to become blind before we made the diagnosis. Today we diagnose the case immediately in order to enable us to cure it. I appreciate the opportunity of discussing these splendid papers and to impress upon you that Syphilis is a disease which has so many aspects that it requires intelligence and not routine treatment. Each case is a case of itself. We must regard the patient, rather than the disease, as a problem.

Dr. Anderson:

I want to express my thanks and I believe the thanks of this entire body for the exposition of truth we have just listened to. I happen to be in charge of the State Hospital and I know what these terrible results mean, caused

by the lack of proper treatment. I wish everyone connected with this work could know something of the value of this address we have listened to. I thank Dr. Wile personally, and know all of us feel under obligation to him for coming here.

Dr. Abernathy:

I also want to thank Dr. Wile for coming here and giving us some real information about Syphilis. I want to ask him: "Don't you use mercury at all?"

Dr. Wile:

I think if I had to choose a remedy and use it unintelligently, I would use mercury itself. Salvarsan cannot be unintelligently used, but there is no drug that is as unintelligently used as mercury. A number of years ago I had occasion to analyze some hundred cases of Syphilis, in which all of the treatment was perfectly plain. We discarded all of those who had not been treated at all, and took one hundred severe cases in which treatment had been given. In that number 90% had been given proto iodide pills. It is the most convenient way for administering mercury so far as the patient is concerned. In order to saturate the patient you have to give him such severe doses that the proper treatment is never reached. It must be an accepted fact that the interrupted form of treatment in the form of injection stands first. I do not mean to say that there are cases in which we should not use the injection treatment, because young infants and elderly people present a different aspect. Salvarsan acts very differently from mercury. There is a time when we do not know what Salvarsan is doing. I cannot tell anyone how much of that to give a patient and how much not to. I think a patient should receive it and mercury also.

Dr. C. B. McNairy:

In regard to the children of these people suffering from Nervous Syphilis, as to the longevity of children and their mental condition?

Dr. Wiles:

If you refer particularly to the children of the patients, I am not prepared to answer, so few have had children, time has been so short. I have seen numbers of cases where patients have married and had children and they were alright; but as to children, we have a very interesting problem. It brings up the whole question of transmission of Syphilis from father and mother to the child. But it must be admitted, beyond any question, that they do have perfectly healthy children. I have in mind a dozen, off hand, and then members of the community whose parents have been syphilized. Only very recently one of my pupils brought me his father in an advanced stage. I have had a number of cases. I know of a man who is an excellent man, whose father I treated and whose mother died of syphilis of the bowels. On the other hand, we find cases where children are not strong and healthy. But I am prepared to state if a person marries a syphilitic, then the chances of the children are far less than the one who marries a woman without syphilis.

Dr. McNairy:

My record shows that most of the children that show affection are the first child.

Dr. Wile:

I am perfectly convinced that Syphilis is contagious, but that most feeble-minded children are not syphilitic; that Syphilis does not play a very big role in the incidence of feeble-mindedness.

Not very long ago in the State Hospital in Michigan a very careful study was made, and I think only 3 or 4 per cent was found to be syphilitic. Their parents had other diseases besides Syphilis, without doubt. Occasionally we found a very direct nervous syphilis in a mother and child. I know of three young children whose parents had nervous syphilis and all three of the children developed the disease, but that is a very striking case.

Dr. Crowell, Charlotte:

The field has certainly been well covered this evening. I simply want to call the attention of the members of the staff to the appalling fact that it is a very serious disease, and that the early diagnosis, the facts and figures that have been brought out this afternoon from Dr. Abernathy's paper on the early diagnosis, the recognition of the disease in its early development is enough to arouse the profession to its great importance, and to go away with the determination that they will do more than ever before to prevent the spread of the disease. I am so glad to see our State authorities taking hold of this problem with such vigor and may we not hope that the day is not far distant when these late results will practically be no more, because if we will carry out the plan of treatment outlined in these papers it seems to me that we can prevent these late manifestations, treating the patient, rather than the disease, as Dr. Wile stated.

Dr. McBrayer, R. A.:

With two excellent teachers, Dr. Wile and Dr. Crowell, we have had a corking good lesson, with help from the others. I thank them on behalf of the medical profession and the people of North Carolina.

Dr. Abernathy:

We are attacking the problem as a public health problem. There is no question about the fact that the treatment of Syphilis is alright; there is no argument about that. But all of us can't use a spinal treatment for syphilis. We have got to use what we can get our hands on. We are compelled to use the best way we know how. All the syphilitics in North Carolina can't come to Charlotte or go to Raleigh and be treated. We are trying to get the men in the country who know how to do it, or get so interested in it that they will learn how to do it. I don't know whether or not I am fully converted that all Syphilitics should be treated by the spinal canal. I have two cases in my records, paralysis below the waist which was relieved of paralysis and made a good citizen by the intravenous injection of salvarsan and mercury and large doses of iodine. I don't know how it got in there, but they were taken out of the bed where they lay helplessly paralyzed and are now walking around doing their work, and didn't get any spinal treatment. We are trying to reach the man out in the woods, the man who has not got the money to go and be treated, and get some man in that county that can give Salvarsan and Mercury correctly.

Men are ready to say we can't go into the diagnosis and management of these early nervous syphilis conditions. But the time is not far distant when the men throughout the country will equip themselves to do this line of work, and we will be cutting out a whole lot of work Dr. Anderson is doing as the result of Syphilis. He is caring for this a great deal in the Insane Asylum, and I believe with care of these patients we will prevent the spread, as well as the nervous cases in the State Hospital.

Dr. Knowlton, closing discussion on his paper:

I would like to say a word or two in regard to the point Dr. Wile mentioned concerning reporting. We must not lose sight of the fact that the primary object of having communicable diseases reported is to permit the health authority to exercise supervision over the cases that need supervision in order to protect the public health, as pointed out in one of the papers I read. "A case of venereal disease, even though they be in the infectious stages, should be so handled as not to be a menace to the public health." So it is not necessary to have the names and addresses of all cases reported. It seems to me that the best practicable solution of that problem—that has been worked out in several places and applied satisfactorily—is to put the proposition up to the physician himself as to whether or not he will report the cases by number. So it seems to me that the common sense, practical way of requiring reporting gives the physician the option of reporting by name and address or by number, which will give the Health Officer information concerning cases that ought to come under his supervision.

Adjourned.

WEDNESDAY, APRIL 21, 2:30 P. M.

The President announced that according to adjournment we would proceed to ballot for seven members of the Board of Medical Examiners of the State of North Carolina. Before doing so, Dr. H. A. Royster, Secretary of the retiring Board of Medical Examiners, made the following report:

REPORT OF BOARD OF EXAMINERS.

By H. A. Royster, Secretary.

To the Medical Society of the State of North Carolina:

The Board of Medical Examiners, elected by you in 1914 and come now to the close of its six years of service, desires to return to you the trust imposed and to render an account of its labors. Each year a report of our examinations has been published in the Transactions of the Society; but the members of this Board resolved to present to you a summary of their complete record, and of their own accord requested the privilege of addressing you today.

It will be manifestly unnecessary, and in some respects impossible, to offer you all the details of the work. What seems essential is to state the principles which guided our conduct from the beginning, to outline definite alterations that were made in the laws, to express some of the results achieved and to propose certain recommendations for your judgment.

Our initial controlling desire was to elevate the requirements for admission to examinations. From the results of our first examination in 1915 it was seen that a large number of applicants were poorly prepared both academically and professionally and had been unsuccessful before the Board year after year, running the number of failures up high. Practically all of these were found to be graduates of schools rated lowest by the Council on Education of the American Medical Association (Class C). Our plain duty was to eliminate these applicants. It was further evident that elevation of the requirements should be gradual, but decisive. Accordingly, under the statute giving the Board authority to define a "reputable" medical college, the rule was adopted rejecting Class C applicants after 1915 Class B applicants after 1916 and after 1917 accepting only Class A applicants. This rule has continued in force. Its adoption has reduced the percentage of failures by one-half, or more, because those who come from the high grade schools are already qualified by preliminary and professional education, and the only question for a Board of Examiners to determine is whether by character and attainments these applicants are competent to practice medicine in North Carolina.

There is still a flaw that prevents the perfect working of our Class A rule, namely, a proviso in the statute which states that a license in another State stands in lieu of a diploma and entitles to examination. This amendment was passed before our reciprocity act became a law, and, as it exists today, nullifies our rule to accept only Class A applicants. It should be repealed. Two attempts have been made to do so, but each time the result was a failure, in the one case owing to a misunderstanding fostered by a medical member of the legislature, and in the other due to physical loss of the bill in committee. There could be no possible objection to repeal of the amendment, since it cannot operate to the disadvantage of any North Carolina citizen. In the meantime, it must be confessed that this little proviso has enabled the Board to sidestep the issue of the so-called "limited license" in particular cases. It may be observed in passing that doing away with the limited license law may soon come to pass, since it has fulfilled its mission and because of a demand even from its legislative author and some of his constituents to remove the stigma which the act implies. But this is an affair which coming boards must decide.

One of the innovations adopted by the present Board was the passing of a law allowing students the privilege of coming up for examination on the fundamental medical branches—anatomy, physiology and chemistry, with their accessory subjects—at the end of their first two years of study. The Board members were unanimously in favor of this provision and had discussed the propriety of adopting it on their own motion as a rule but it was undoubtedly a stronger feature to enact a law covering the situation, and the Board acknowledges the help of a member of a former Board who at the time was a representative in the lower legislative house and who proposed and introduced the bill. In the opinion of our Board, this change, on the whole, has worked well. It affords, of course, an immense advantage to the applicants, while entailing only a slightly increased amount

of clerical work upon the examiners. With apology for the personal allusion, it is on record as far back as 1893 that the Secretary of the present Board was the first to apply for the privilege of passing the first two years' work separately and that the request was respectfully denied. Thus is fate reversed.

Very early in its deliberations the Board keenly realized three important facts: First, that it would be desirable to divorce its own sessions from the meetings of the State Medical Society; second, that a permanent place centrally located would be advantageous both for the examiners and the applicants; third, that in justice to themselves and to the students, the Board should take the papers home for inspection and report later and not grade them during the rush of examinations. Means were devised to bring about these reforms.

Before the county unit organization plan was agreed to in 1904, it was vitally necessary for the examining Board to meet just prior to and along with the Society, for by this arrangement the newly licensed physicians could immediately be admitted to the State organization. But after 1904 all new members came in through the county societies, and the need for an overlapping session no longer existed. Besides, it seemed very desirable to place the time of examinations later in the summer, long after the closing of all the medical schools. Further, there was to us a yearning for a detached, quiet session, without let or hindrance, visitors or assistants. Finally, there appeared to be no valid reason against the change. The law was amended by act of the legislature without shadow of opposition and with every commendation for the improvement. Having had one trial under the old system, we assert unhesitatingly that nothing could induce us to go back to it.

The question of a permanent place for meeting is somewhat bound up in the foregoing arrangement. As long as the Board was compelled to meet with the Society, the transfer of books, records, apparatus and other paraphernalia entailed expense, trouble and losses. Previous Boards had no chance to accumulate fixtures, to develop enduring plans for conducting their examinations or to carry on efficiently the routine work of the Secretary's office. The advantages of a central location for the permanent meeting place are obvious. It means a saving of time, money and labor for examiners and applicants. Our law now provides that the principal meeting shall be held each year in the city of Raleigh, but that other meetings may be called there or elsewhere, in the discretion of the Board. It is but fair to say that the resolution calling for this change in the law was introduced, not by a member of the Board living in Raleigh or vicinity, but by a member from the western section of the State. The Board is now of one mind in declaring the step wisely taken and more than justified by the results. What the incoming Board may decide to do with this matter will depend upon availability, geography and personality.

Under the old regime, when the Board assembled one week in advance of the Society session, they were forced to do their work under high pressure, using every moment night and day in which to get their report ready for the first day's meeting of the Society. The members of the present Board frankly felt unwilling to continue this method, if possible to avoid it, after

their one trial in 1915, when 134 applicants presented themselves for examination. As soon as the conditions were changed there was no occasion for an oral report and no hurry for the inspection of examination papers. The safe and sound policy at once suggested itself, namely, to grade the papers carefully and leisurely, giving such time as might be necessary for deliberation and discussion. The custom of this Board, therefore, has been for the examiners to take their papers home, read and mark them at their own convenience, forward the grades to the Secretary as soon as completed, and then about two weeks after the examinations to meet for conference. Immediately following this, the names of the successful candidates are published as required by law. The relief and the satisfaction gained by this improved procedure can be felt only by those who have had experience of both the old and the new method.

In the foregoing discussion of the three important objectives which the Board set out to reach and finally attained, it will be observed that the first move was the most essential. Indeed, upon the separation of the Society and Board sessions everything hinged; for the selection of a permanent meeting place and the orderly examination of papers could not have been accomplished without a change in the law which formerly required the two bodies to meet near each other in time and place. So far from pulling them apart, however, the new plan really brings the Board and the Society closer together; for it allows the examiners greater liberty to attend the Society meetings and accentuates their responsibility and their co-operation. It should constantly be emphasized that the Board is the creature of the Society, and the present Board has sought to strengthen this relation, believing that the selection of its members by the Society in open session is the soundest method whereby expression of its will may be made by the larger organization and through which the smaller body may accept its obligations.

An inspection of the former laws relating to the prosecution of illegal practitioners caused us to realize very promptly that they were inadequate. These prosecutions had been left to the local societies or to individuals, and there was no definite machinery for the conduct of such cases. There was no provision for the Board itself to handle them. We were convinced that a Board that had power to give license should have the power to prosecute those who violate the law under which it was created. We felt that these prosecutions should be taken out of local hands and placed in those of a central authority, and that at the same time rules should be made for beginning the actions and carrying them on to successful conclusions. The outcome of our efforts was the present law, passed without opposition, founded on a like measure which had proved adequate in other States. It provides, in effect, that upon complaint of the Board of Examiners the Attorney-General of the State shall investigate the case, and, if in his opinion, the law has been violated, he shall direct the Solicitor to prosecute, and the original jurisdiction shall lie in the Superior Court. The strong elements appear in this law, viz.: the psychological power of the State's chief prosecutor, his direct control over the district solicitors (as set out in the constitution, but not generally recognized), and the primary handling of the cause in the Superior Court instead of by a magistrate. Thus each case is divested of its local color and so-called personal prejudice. It immedi-

ately becomes a State-wide matter—an offense against a North Carolina statute, and not merely a community affair. The effect of the operation of this law has been most satisfactory. By its aid we have been enabled to convict or drive out of the State a dozen of the most notorious quacks and in addition to eliminate at least a score of lesser offenders. At times the routine letter from the Attorney General's office is all that is required to deter would-be violators of the law. No such results could have been obtained without the employment by the Board of its own attorney, as suggested in the act, and this Board goes on record as having been the first to make such an arrangement. We give it our unqualified endorsement. The services of a legal advisor are vital and especially if he is available to represent the Board and assist the Solicitor in any court in the State. During our incumbency the license of one physician has been revoked because of conviction in court of criminal abortion. Only one cause is now in our statute for revoking a medical license—grossly immoral conduct. At best, this is vague and indefinte. The number of causes should be increased and proper methods prescribed for procuring the result.

No attempt has been made to cover all the points which might be subjects for discussion. The Board is conscious of its limitations in making its report at this session of the Society. There is one more examination for us to hold, and we are not able, therefore, to include all of our work in the summary given. But at this meeting you will elect our successors, who, thanks to the separate meeting of Society and Board, will have the advantage of attending examinations before their term of office begins. We tender them (whoever they may be) a cordial invitation to join us at Raleigh on June 21, 1920, and engage with us in the conduct of our last series of examinations. It is to them that this report is largely addressed, for we know the burdens and the labors which lie ahead of them, and if it is in our power to lighten the load we are only too glad to do it. The fact that the incoming Board will have the benefit of consultation and demonstration beforehand (which we did not have), precludes the necessity of recommending a return to the old plan of electing two examiners every other year. But for this attendance on the retiring Board's examinations, we would be sorely tempted to advise the fractional system; for the assumption of office by seven perfectly new men, with no hold-over to furnish instruction or encouragement, is not an alluring prospect, to say the least.

There has been so much pleasant association, so great reward in duty honestly performed and so many opportunities for service that we have been forced to forget the toil and the tribulations. Among the members of this Board have existed the most affectionate feelings, the closest comity, the greatest good-will and the sincerest devotion to the same high purposes. All of these outweigh any sacrifice or labor or time or trouble.

We hope for our successors the same harmonious relations that have attended our deliberations. Differences there have been, but none created or held in a spirit of rancor, and always there was a sense of right and justice prevailing. We had always before us the consciousness that we were in fact officers of the State, commissioned to protect the people from imposters and incompetents, not dealers in favors or promoters of the unfit. An absolute standard and rigorous enforcement of rules represented our ideals.

We are turning over to the next Board certain financial and physical assets —things which were not in our hands when we assumed office. That these will be made proper use of goes without saying. The new Board will possess benefits never before granted to any other. We wish for them an abundance of success.

General Session

WEDNESDAY, APRIL 21, 11:15 A. M.

NOMINATIONS FOR MEMBERS BOARD OF MEDICAL EXAMINERS.

Meeting called to order by Dr. Reynolds.

"We have met here for the purpose of receiving nominations for seven members of the Examining Board."

Dr. Faison:

Gentlemen of the North Carolina Medical Convention, I want to introduce this resolution:

"North Carolina State Medical Association, in annual convention assembled, sends its greetings to the distinguished head of the nation—President Woodrow Wilson, and pray for him a speedy and complete recovery and express our continued confidence in the righteousness of his guiding hand."

Motion seconded. Carried.

Dr. Moore, Elm City:

North Carolina has four candidates for its Governor, and one open aspirant for the National President. May we indulge in the hope that in the month of June, on the shores of the golden west, he will pluck the fruit from the tree which bears his name. The North Carolina Medical Society is not ready for an election which I now conceive to be of the highest importance, both to the profession and the State. Modesty is more a heritage than a seeming virtue. If we make an error it is our error. If we blunder in our choice it is our fault, and the responsibility as well as the penalty will be ours. Suggesting one man as a member of the Board of Examiners to be elected, whom I would endorse as a capable and worthy as trusty and still worthier of a further trust, I take great pleasure in presenting to you the name of Dr. E. T. Dickinson, of Wilson, N. C.

Dr. Brooks, of Blowing Rock, nominated Dr. Carl Reynolds of Asheville.

Dr. Fletcher, of Asheville, nominated Dr. D. E. Sevier of Buncombe.

Dr. J. P. Monroe, of Charlotte, nominated Dr. L. A. Crowell of Lincolnton, N. C.

Dr. J. W. Long, of Greensboro, N. C., nominated Dr. D. A. Stanton of High Point, N. C. (Seconded.)

Dr. J. E. S. Davidson, of Charlotte, placed in nomination Dr. L. N. Glenn of Gastonia, N. C. (Seconded.)

Dr. Cramner, of Winston-Salem, placed in nomination Dr. J. G. Murphy of Wilmington, N. C.

Dr. MacNider, of Chapel Hill, placed in nomination Dr. C. A. Shore of Raleigh, N. C.

Dr. J. T. J. Battle, of Greensboro, placed in nomination Dr. W. M. Jones of Greensboro, N. C. (Seconded.)

Dr. J. F. Highsmith, of Fayetteville, placed in nomination Dr. W. P. Holt of Duke, N. C. (Seconded by Dr. E. B. Glenn of Asheville.)

Dr. J. M. Templeton, of Cary, placed in nomination Dr. J. Rainey Parker of Graham, N. C.

Dr. C. B. McNairy, of Kinston, placed in nomination Dr. L. A. Crowell of Kinston, N. C.

Dr. H. D. Stuart, of Monroe, placed in nomination Dr. Sam Stevens of Monroe, N. C. (Seconded.)

Dr. Cyrus Thompson, of Jacksonville, placed in nomination Dr. K. P. B. Bonner of Morehead City.

Dr. W. H. Scruggs, of Asheville, placed in nomination Dr. F. W. Griffith of Asheville. (Seconded.)

Dr. J. R. Alexander, of Charlotte, placed in nomination Dr. B. J. Witherspoon of Charlotte, N. C.

Dr. M. A. Adams placed in nomination Dr. J. W. McConnell of Davidson, N. C.

Dr. Bullitt, of Chapel Hill, placed in nomination Dr. Fletcher of Asheville, N. C. (Dr. Fletcher stated he had served six years on that board and requested that his name be withdrawn, which was granted.)

Dr. J. L. Spruill placed in nomination Dr. H. D. Walker of Elizabeth City, N. C.

Dr. E. B. Glenn, nominated Dr. Percival Bennett of Bryson City, N. C.

Nomination closed.

General Session adjourned to 2:30 P. M.

The President declared balloting for seven members of the Board of Medical Examiners of North Carolina in order and the balloting was proceeded with. Dr. Cyrus Thompson reported for the tellers that each of the following gentlemen had received a majority of all the votes cast: Dr. L. A. Crowell, Charlotte; Dr. K. P. B. Bonner, Morehead City; Dr. W. M. Jones, Greensboro; Dr. C. A. Shore, Raleigh; Dr. J. G. Murphy, Wilmington; Dr. W. P. Holt, Duke; Dr. L. N. Glenn, Gastonia.

Dr. Thompson stated that this was the first time in the history of the Medical Society of the State of North Carolina that seven members of the Board of Medical Examiners of North Carolina had ever been elected on the first ballot.

Thereupon the President declared the gentlemen named above duly elected for a term of six years, beginning at the expiration of the term of the retiring Board, June, 1920.

WEDNESDAY, APRIL 21, 3 P. M.

Dr. Tom A. Williams, Washington, D. C.:

The oldest body in this country devoted to sociological medicine is the American Academy of Medicine. It is a body the requirements for membership in which include a medical degree plus an academic degree. It has been decided that the latter qualification shall no longer be necessary. I have been asked to make an announcement to the several societies which I am going to visit that the American Academy of Medicine wishes to enlarge its membership. What it has done is well known only to the

public health workers and the sociologists. It was the forerunner of most of the public health movements which are now interesting us and in which the laity are beginning to be interested. I have with me a list of the publications of the body, and it is most impressive. This sheet contains merely the titles of the publications of that organization. They were all published in the Journal of Sociological Medicine. Those who are interested in this association have only to write to the secretary, Dr. Grayson, of Pittsburgh, or to me, stating their interest and that they wish to join. For the membership fee one obtains the Journal of Sociological Medicine, and the privilege of attending the meetings, which occur once a year, and of taking part in the discussions. A great body of literature is also sent. I shall be very glad if those who are interested will take from the table one of the catalogs of publications. If those who are further interested will then write to the secretary, Dr. Grayson, in Pittsburgh, or to myself, they will be put in touch with a body which has done and we hope will continue to do most fundamental work for the benefit of the community, as well as in raising the standard among medical men engaged in sociological work.

ELECTION OF MEMBERS OF NURSES' EXAMINING BOARD.

WEDNESDAY, APRIL 21, 6 P. M.

Dr. Reynolds, President:

The election of a member of the State Board of Examiners for Nurses is now in order.

Dr. L. B. McBrayer nominated Dr. D. E. Sevier,* of Asheville for this place. The motion was seconded and unanimously carried.

Board of Examiners for Trained Nurses:—

Miss Lois A. Toomer, President, Wilmington.
Miss Effie E. Cain, Secretary-Treasurer, Salisbury.
Miss Mary Laxton, Biltmore.
Dr. J. M. Parrott, Kinston.
Dr. C. F. Strosnider, Goldsboro.

WEDNESDAY NIGHT, APRIL 21, 8:30 P. M.

Dr. W. P. Whittington, Asheville:

It gives me great pleasure tonight to have the privilege of introducing to you—without any flowery speech, for I think the flowery part of the speech-making was done this morning in nominating candidates—Dr. William L. Clark, of Philadelphia, who is lecturer on applied electricity at Jefferson Medical College and co-worker with John Chalmers DaCosta, whom we all know and love. Dr. Clark will give a lecture on "New Conceptions Relative to the Treatment of Malignant Diseases and Some Other Refractory Pathological Conditions," illustrated by lantern slides.

Dr. William L. Clark, Philadelphia:

I desire to thank the Committee on Scientific Work and the Society for

*Dr. D. E. Sevier resigned on June 4, 1920, and Dr. J. M. Parrott, of Kinston, was elected to serve until the Medical Society shall have elected a member to serve a three-year term.

the invitation to speak to you tonight upon some matters of mutual interest, and I am glad to renew acquaintance with various members of the Society whom I have met from time to time. I am also glad of the opportunity to present some of my views upon the cancer problem, especially, and upon some other pathological conditions as well.

During the last twelve years I have devoted my best thought and study to the management of cancer cases. I have had the opportunity of seeing a large number of all types of cases in almost every possible anatomical location. This subject is a very broad one, and we are very far from the solution yet. I may say, however, that much progress has been made in the last few years, and there are some phases of the cancer question which I believe I may say have been solved. There are some very malignant types of internal cases about which we do not yet know much, but so far as the skin cases are concerned I believe they have been solved.

Until we find the exact cause of cancer we have very little upon which to work. It may be that like a bolt out of a clear sky the discovery of the real cause will be announced. It may be then that we shall have a specific for cancer, as we have a specific for diphtheria and other conditions. But at present local attack seems to be the best we can do, and until we find the cause of cancer and find a specific we must devote our energies to the best way of attacking cancer locally.

We have different degrees of malignancy in cancer.

We have the type that progresses slowly and never metastasizes. If we get it in its entirety, we may expect a cure. It may recur sometimes, but that is due to bad technique or lack of thoroughness. With the squamous, slow type, involving mucous membranes, we have a different type of cancer, one that metastasizes early, and we can never tell where we are. Fortunately, however, we have ways and means for combating that, which I will discuss later.

The methods worthy of consideration at the present time are operative surgery, which we cannot do without in many phases; radium, dissection, and the Rœntgen rays. Of course, results are obtained oftentimes by our escharotics, carbon dioxide snow, etc. Sometimes results are obtained, but more often bad results than good ones. My experience in my own work, and my observation of the work of others who have had considerable experience with these pastes, etc., have led to the conclusion that good results are due more to good luck than to anything else. However, some results are obtained by their use, and sometimes it is impossible to have other facilities, and of course then we are justified in using these pastes, etc. But if other means are available we should use them.

Of course, all the methods are valuable, and all have their distinct place. However, the surgeon who depends upon surgery alone, the electrical man who depends upon electricity alone, the radium man who depends upon that alone, will fail and will not do justice either to his patients or himself. A man who makes a pretense of specializing in malignant disease should be able to treat malignancy from every angle. He should know the indications for every method of treatment. Therefore, my experience has been that to obtain the best results by local attack we should be able to use these tried methods in combination. I have a great many slides showing various

angles of this work, and what has been done up to this time and what may be expected in the future. Some phases of it are a treatment hitherto unpublished, to which I shall allude as I go along. I shall be glad to have you ask any questions which may occur to you.

Radium is a method which gives good palliative results in uterine cases. Radium needles have cleared up some uterine cases, though none have passed the five-year limit. Rectal cases are the worst of all. Uusually the liver is involved. They are bad cases.

There is a big field in our dissection method in surgical tonsils. Our ordinary method of destroying tonsils with a snare or taking them out is perfectly satisfactory. But there are other cases in which we may use the dissection method as a very worthy substitute for our surgical procedure. It can be used also for destroying hemorrhoids. There are many other uses for these methods, but as my time is up I cannot mention them now.

STATE MEDICINE.

W. S. Rankin,
Secretary North Carolina State Board of Health, Raleigh, N. C.

My understanding is that the Secretary of the Society endeavored to get several men—men of national reputation, and men who have been giving a great deal of time to this question of State Medicine, what it is and what it covers—to discuss it before you. They were unable to get Dr. Lambert and Dr. Warren, of the United States Public Health Service. So finally Dr. McBrayer had to fall back upon me, and he consigned the entire subject to me.

Definition: This term has been applied at different times and places to various activities undertaken by collective and sovereign people for the treatment and prevention of human diseases. It has been applied to steps taken by states in determining the qualifications of those who should attend their sick; it was applied in the 80's and 90's to the official acts of boards of health; in England and in Europe the term when used today refers to social insurance. Obviously, before entering into a discussion of this subject, which has come to mean different things to different persons, it will be necessary, in order to forestall useless discussion and to prevent misunderstandings, that we all have the same conception of the term. For this purpose I think the following definition will pass muster: State Medicine is any part which a state or any of its constituent parts may assume in combating disease.

The Basis of State Medicine: State Medicine was foreordained and its secure foundations laid on Sinai. The ten great basic principles of civilized law there established follow a significant order: In the first four God defines man's relation to Himself; in the fifth, man's relation to his home; and in the last five, man's relation to his fellow-man. The first of the laws defining man's relation to his fellow-man is the law protecting human life, and protecting it from every agency and factor which may contribute to its destruction. After the words "Thou shalt not kill" there are no provided howevers, permitting life to be destroyed in some particular manner or manners. This law applies to the individual man, but it is

not restricted to the individual; it applies to man collectively, to the group, to the citizen, to the state. This law forbids the destruction of life by willful acts of commission and by careless, passive omission; it forbids the destruction of life in murder, by violent and sudden means; it forbids the destruction of life by the almost imperceptible and long-drawn-out imposition of conditions on men, women and children that slowly sap their energy, their blood and vitality through a course of years. This law commands that the individual and citizen not only refrain from acts that kill suddenly and that kill slowly, but it commands that we shall not neglect or refuse to do anything that, left undone, would result in the loss of life. As the opportunity to save life exists until the last breath, the law "Thou shalt not kill" requires the individual and the state not only to prevent disease, but also to see that diseases are properly treated and cured, where possible, covering, therefore, both the field of disease prevention and that of medical relief.

Sub-divisions of State Medicine: As suggested above, there are two main sub-divisions in State Medicine: Disease prevention and disease cure. The first, disease prevention, is the more important of the two. The population, the well, with which it is concerned is thirty-three times the size of the sick population. The dividends on money and energy invested in disease prevention and in the promotion of health—in keeping the *fit* fit and making them fitter—are much larger than the dividends on investments in the repair of broken-down vital machinery. The fact that the field of disease prevention is the larger does not altar the related fact that the field of medical relief is large enough to justify the best efforts of both the individual and the citizen. The citizen of the State cannot draw an arbitrary line between health and sickness and say "to this line the responsibility rests upon me of saving life, but beyond this line, in the field of cure, of medical relief, neither I nor my State have any responsibility; the case is wholly with the medical profession." The obligation, with the individual and citizen, to save life exists until life is gone, to the very last breath. Moreover, the treatment of the sick, the cure of disease, is a very necessary means of preventing disease. This is particularly true in preventing tuberculosis and venereal diseases With this general statement as to methods of State Medicine, we shall proceed now to the consideration of the more important special activities undertaken by the State, first, in the field of disease prevention, and, second, in the field of medical relief.

DISEASE PREVENTION.

1. *Vital Statistics*: A division of vital statistics in state government is the exact parallel or counterpart of an intelligence division in an army. It is the business of an intelligence division in an army to ascertain the number of the enemy, the position of his various units—cavalry, artillery, infantry, aviation, etc., where an attack on him is likely to be most effective, and if and where the enemy expects to attack. The vital statistics division of a state government has identically the same essential function. Its business is to determine the size of the enemy, his potential power to destroy life and health, his divisions into various diseases, the location within the state, the counties, towns and townships where these diseases are most prevalent, and to ascertain where an attack on preventable diseases is

likely to get the biggest returns for the expenditure to be made, and where disease is next likely to attack. Without birth, death and morbidity statistics the ship of state sails an uncharted sea of human life; it has neither log nor compass, and cannot know whether it is drifting backward or moving forward. I may say, on account of the professional character of this occasion, that the only incontrovertible proof of the large contributions of medicine to human progress is in the form of statistics, the declining death rates following and closely related to medical discoveries. Do away with the statistics, which some of the short-sighted, over-worked members of the profession hate so much to assist in collecting, and you do away with the material proof of medical achievement and with much of the glory of our profession.

2. *Health Education*: In the recent war the Government found it necessary to mobilize the resources, military and civilian, of the entire nation. The co-operation of all the people was absolutely essential in undertaking to carry to a successful conclusion our preparedness program. To secure that co-operation it became necessary to inform the people by every known educational method—press, moving picture, pamphlet, the living voice—of the reasons for the war, of the purpose of the Government, and of the part each and every individual could play and should play in the winning of the war. The war with Germany has been won. In the winning of that war North Carolina lost approximately 1,000 men killed in battle, and had 4,000 others wounded. The war against preventable disease has not been won; it continues, and we have every year 10,000 to 12,000 unnecessary deaths and from 100,000 to 150,000 wounded in this as yet unsettled contest. Our loss *annually* in the fight against preventable diseases is from twelve to fifteen times greater than our loss in the war against Germany which we helped to win. Educational methods for informing all the people of the reasons for the war against preventable disease and death and the part that each and all can play and should play is just as necessary in fighting preventable diseases as it was in fighting preventable autocracy. Health education is the primary and most fundamental activity of the state in maintaining and promoting its public health.

3. *Quarantine*: A quarantine service has a reason and purpose for its existence, as a fire department. It is to put out a fire, but a fire that burns and destroys, not wood, but living human flesh. A quarantine service is dependent upon the intelligent service of the health department, upon the health department's ability to get prompt and complete reports of the human fires, the contagions that break out. If the fire is not reported there can be no response by the department entrusted with its control. None of the measures of quarantine, the details of which it is unnecessary to go into here, can be thrown around an unknown source of infection to prevent it from involving a community and distant sections of the state.

For the notification of the health department of the existence of contagious disease the public is dependent very largely upon the practicing physicians. I say very largely because there are many contagious diseases, and of a deadly nature, notable examples of which are measles and whooping cough, that in many instances are too mild to call for a physician, and in such cases the public is dependent upon the intelligence and the willing-

ness of the citizen to undergo the possible inconvenience of quarantine as a result of reporting contagion in his own family. Proof is at hand to show that North Carolina physicians deserve to be commended for reports of contagious diseases. Only in typhoid is their record bad. To illustrate: In 1919 there were 427 deaths in North Carolina from typhoid, and in the same year 2,956 cases were reported. Either the physicians are not reporting all of their cases of typhoid or the North Carolina medical profession is losing about fifteen patients out of every hundred persons that have typhoid fever, whereas the average profession loses not more than ten per hundred.

When a case of contagion is reported the responsibility is then upon the health department, the public, to make use of the report and to see that the disease is effectively quarantined. Health departments are not justified in inconveniencing either the profession or the public to report infectious diseases unless the health department maks full use of the report by immediately enforcing the State laws, rules and regulations applying to contagious diseases.

4. *Vaccination*: Certain vaccinations, notably the vaccination for the prevention of smallpox and the vaccination for the prevention of typhoid fever, have been demonstrated to be almost 100 per cent effective. The furnishing free of cost of these established vaccines to all citizens and the devising and encouragment of the adoption of plans for the free vaccination of the people is another of the obligations of the state in preventing unnecessary disease and deaths.

5. *Protection of Public Water Supplies*: As populations become denser, as cities multiply, more and more does it become necessary and economically desirable that individuals pool their interests and as citizens establish common or public water supplies. While it is possible in certain locations to secure a fairly adequate and suitable ground or well water supply for an urban settlement, this is the exception. For the majority of towns and cities the only available adequate and suitable water supply is the surface water of streams and rivers. Now a stream used as a public water supply lies beyond the official jurisdiction always of the city that uses it, and nearly always of the county in which the city is located, so that the only control for the protection of the purity of the stream is state control. For this reason most States, including our own State, have assumed and exercise a variable degree of oversight and regulation of the watersheds of their streams, creeks and rivers.

6. *Sanitary Control of Important Sources of Diseases* During the last three years important investigations as to the practicability of eradicating malaria from thickly settled communities, villages and small towns, through the control of mosquito breeding by filling, drainage and oiling have been carried out. It has been demonstrated, notably in Arkansas, that with a per capita annual expenditure of from one dollar to a dollar and a half for the first year's work and thereafter an expenditure of from twenty-five to fifty cents per capita, the prevalence of malaria can be reduced from eighty to ninety-six per cent. The saving to the people of these communities in druggists' and doctors' bills and in time lost to productive labor amounts to five to ten dollars per capita; and this financial saving does not take into

account the human side of the case—the anxiety, suffering and grief on account of disease. This important piece of work for controlling malaria in the more thickly settled communities is now being undertaken, to a limited extent, in many urban settlements scattered throughout the South.

Another example of the sanitary control of important sources of disease is the act passed by the recent General Assembly of North Carolina, which prohibits the open, unsanitary privy in urban settlements. This act was restricted to urban communities for two reasons: (1) The town unsanitary privy is more dangerous than the rural unsanitary privy. The town privy has a fly-range—three hundred yards—on from fifteen to twenty homes, with a total population of from seventy-five to one hundred and twenty-five persons; whereas, the rural privy, as a rule, has a fly-range on only one home with a population of from five to seven. The act, therefore, applies to the more dangerous type of unsanitary privies, to those that are killing the larger number of people. (2) The open, unsanitary privy in the country is under the immediate control of the person or persons injured or liable to be injured by it; whereas, the urban unsanitary privy is not, as a rule, under the control of those whose health and life it destroys. The State law therefore, in restricting itself to urban privies, protects those individuals who are exposed to the dangerous closet over which they have no control.

7. *The Development of County Health Work*: When the Federal Government has done all within its power for a State the State may do much for itself; when a State has done all within its power for its counties the counties may do much for themselves, just as a man can do more for himself than all assisting agencies together can do for him. One of the larger and more important objectives of State Medicine is to influence the local governments of a state, the counties, to assume a larger part in the protection of the health and lives of their citizens. This means, of course, the establishment of full time county health machinery. In North Carolina there are at present twenty-eight counties with such full time machinery, and there are ten other counties that have already made financial provision for either a full time health officer or nurse, or both, as soon as these officials can be found. Before 1920 has gone fifty per cent of the population of North Carolina will be living under the protection of some sort of full time local public health machinery. In this field of public health work North Carolina excels.

Dependent upon the size of the budget provided by the county, the following units, or independent pieces, of county health work are being undertaken: (1 a thorough enforcement of the State quarantine laws, the enforcement of which is always in direct proportion to the intelligence and courage of the county official; (2) an educational program directed to the general adoption of sanitary privies in rural homes, to the end that fecal-borne diseases—typhoid fever, dysentery, diarrheal diseases of infants, or summer complaint, and hookworm diseases—may be limited in their prevalence; (3) the setting up of local dispensaries for giving free vaccination against typhoid fever and smallpox, and the encouragement by educational means, of the people to take advantage of the dispensaries; (4) providing the facilities for and encouraging the people, particularly adults, to submit themselves for periodic medical examinations in order that incipient disease

may be detected and referred to the medical profession for treatment before it has become chronic and progresses beyond repair; (5) an educational program to interest the general public in the prevalence and the infectious character of tuberculosis, and to encourage persons with suspicions of the disease to apply at the office of the county health officer for a preliminary examination, and in case such person is found to be infected, referred to proper sources for early and effective treatment; (6) the use of nurses to get in touch with the mothers of the county, individually and collectively, and especially with the mothers of bottle-fed children and children suffering from digestive disturbances, for the purpose of advising them as to the care of their babies, and in assisting in securing the necessary professional advice and treatment.

MEDICAL RELIEF.

1. *Selecting Those Who Shall Attend the Sick*: The States say to certain persons "you may" and to certain other persons "you may not wait upon and prescribe for our sick." The practice of requiring persons presenting themselves to the public for the treatment of diseases to comply with certain conditions, and of excluding those who could not comply with the conditions, was the first step taken by the States in the field of State Medicine—it was the first recognition by the State of its great responsibility in seeing that its sick were properly treated. To the credit of North Carolina it may be said that our State was the first, creating an official board of examiners in 1859, to see that those who attended the sick were qualified to do so.

In passing upon the fitness of persons to treat the sick the practice of the majority of States has been to create commissions or boards of examiners composed of members of those groups that were successful in establishing their claims with the legislature of being able to heal diseases; then to require all persons desiring a license to practice some form of healing to apply to that commission or board that represented the particular system of treatment which the applicant wished to use.

In following this practice, State legislatures have assumed the responsibility of qualifying, legalizing, and establishing professions. This practice has resulted in multiple boards of examiners. We have a board of examiners for physicians, and another for dentists, and another for nurses, and another for optometrists, and another for osteopaths, and another for chiropractors, and another for pharmacists, and another for veterinarians, and another for embalmers, and another for plumbers, and perhaps others of the existence of which I am happily ignorant.

States, in qualifying professions, in legalizing and establishing them according to the above described methods, commit two serious errors. The first error which the legislatures make in this practice is in permitting each group, those who are financially concerned, I will not say interested, to determine their own numbers and, therefore, the amount of competition within the group. Such a practice is inherently vicious. Moreover, as long as legislatures follow such a practice, having established their precedent, having cut a deep rut in an unsound foundation, they get deeper and deeper in the mire in finding themselves unable to refuse to a new group applying for a privilege that has been granted to all preceding applicants. The

second error which legislatures make is in assuming that they are the proper bodies to investigate and determine the alleged claims of groups to legal professional standing. They are not. States need for this purpose commissions with the peculiar training necessary to determine what are the basic and common requirements which all persons seeking to treat human diseases within the states should be able to meet. To illustrate my meaning: Such commissions would require a certain minimum of academic education for all persons applying for license to treat human diseases; they would require that all persons, in order to treat human diseases, show a knowledge of the fundamental biological sciences—chemistry, physics, biology, embryology, anatomy (gross and microscopic) and physiology. These commissions would have the scientific training and viewpoint, and what is more important, they would have the time and the facilities needed to make a thorough investigation of the claims of any particular school teaching any system of healing or alleged healing. With such commissions all persons asking the permission of the States to treat their sick would be fed out of the same spoon.

The personnel of these commissions on licensure would be composed of such men as the presidents of the universities, the superintendents of public instruction, the State commissioners of public welfare, perhaps the attorney generals, and three or four others selected because of their peculiar fitness to determine what is and what is not a profession, and to apply the intellectual tests necessary to determine a person's fitness to practice a profession. Of course, such commissions would find themselves in need of and would use representatives of the various professions which they had chartered to assist them in determining an applicant's understanding of subjects peculiar to the group. In this way, the commissions on licensure would have an advisory sub-committee composed of physicians, and another composed of dentists, another of nurses, et cetera, one for each profession which the commissions had chartered.

North Carolina was first among the States in establishing the practice of selecting those who should treat her sick; she cannot now be first in establishing an impartial and central commission for determining the rights of groups to establish themselves as professions, but the opportunity yet waits upon our State and this Medical Society to make North Carolina one of the first to take this advanced and this inevitable step in the course of progress.

2. *Rendering Assistance In Diagnosis*: States, recognizing that accurate diagnosis is fundamental in effective treatment, have undertaken already to a limited extent and will undertake more and more in the future as scientific discoveries make possible and as funds become available, to assist physicians in the diagnosis of disease. Certain laboratory tests are now available in most States free of cost to the physicians. Among such tests which physicians may avail themselves of are to be mentioned the blood examinations for the Widal, or typhoid fever reaction; for the Wassermann, or syphilis reaction, for the malaria parasite, and other blood examinations; examinations of the secretions and excretions for diagnostic criteria, such as swabs from the throat for diphtheria bacilli, sputa from the lungs for tubercule bacilli, pus for gonococci and other organisms;

feces for intestinal parasites; also nervous tissue of supposed rabid animals for rabies, et cetera.

3. *Assisting Physicians In the Treatment of Disease*: Most States have undertaken to furnish physicians with certain costly curative agents which require a high degree of technical skill in making them reliable. I refer especially to the antitoxins, to the treatment for rabies, and to those selective chemical agents, such as arsphenamine and neo-arsphenamine. I anticipate that in a few years governments will be producing and furnishing free of cost, not only all of the now known complex specific remedies, but many others that future discoveries will unearth.

4. *Maintenance of Hospitals*: There are certain diseases of a chronic nature which impose economic burdens upon the family and community so great that only the strength of the State is able to bear them; hence, the development of State insane hospitals, on which item alone our own State expends about $750,000 annually—one-fourth of the expenses of the State Government, if we exclude funds appropriated for the public secondary schools. The development of tuberculosis sanatoria is another instance where the State has assumed to a limited extent and will assume to a still greater extent a burden which it alone can carry; however, in the case of tuberculosis the reason for State assistance is not only medical relief, the possible saving of the lives of the sick, but also the prevention of secondary cases, the saving of the well, by the elimination of the carrier.

5. *Medical Relief for Educational Purposes*: For many years the State has realized that its permanency rests with its children and that childhood is its supremest interest; moreover, the State believes that its childhood (the State ten or twenty years from now), to bear efficiently the responsibilities of a great government, must be made intelligent and not be permitted to remain ignorant. For this reason two dollars out of every three dollars collected in North Carolina by the State and local governments are expended on education, or, in other words, the government, State and local, expends twice as much for education as it does for all other things combined.

Within recent years the State has arrived at the conclusion that mental development is very closely related to physical vigor; that to expect a mind built upon weak vitality to withstand the shifting winds of circumstances and the currents of adversity is to play the part of the fool who built his house on the sands. This newer idea in education as to its physical basis has been expressing itself almost incesasntly and extensively throughout the country in the establishment of free school lunches, in well-equipped gymnasia, in playgrounds, and in the employment of physical directors, and in the detection and treatment of public school children for the common defects of childhood, for hookworm disease, bad teeth, defective vision, enlarged adenoids and tonsils, with impaired hearing, conditions which retard not only the diseased child, but the whole class in which he recites. The object of the State in improving the physical condition of school children with food, with well directed recreation and with the removal of their more common physical disadvantages is to insure itself against a tremendous waste of funds spent on public education. Medical relief restricted to public school children, not extended to the child out of school or in the private or parochial school, is an educational rather than a health measure.

In this connection it may be interesting to know that there is now a bill pending before Congress, with splendid prospects of passing, which provides in a most extensive way for the teaching of hygiene in the public schools, for the development of proper physical exercises and for the completest system of medical inspection and treatment of school children. The bill provides an appropriation of $10,000,000 for this purpose, and this appropriation is apportioned to the States on a population basis, the apportionment to each State becoming available when the State appropriates a like amount to that apportioned for the purpose of the bill. In this way, while the bill appropriates $10,000,000 of Federal funds, it provides for the expenditure of $20,000,000. It is interesting to note that the execution of this act is under the Bureau of Education of the Department of the Interior, not under the health service of the Federal Government. In other words, it is being considered by Congress primarily as an educational measure. Should this act become a law, as it promises, North Carolina would soon be expending, either under its Board of Health or its Department of Education or under the joint supervision of these two agencies, about $200,000 a year in treating the common physical defects of its 800,000 school children.

Last year, out of a total expenditure of something like $8,000,000 for public education, the State provided $80,000 for the detection and treatment of the common defects of its public school children. The full appropriation did not become available until January 1st this year, so that during the last ten months only $29,000 in the medical inspection of schools has been expended. With this expenditure 1,174 children have been successfully operated upon for enlarged adenoids and tonsils, and 16,104 children have had their teeth treated, 29,268 permanent fillings having been made. This work, if done without the State's assistance, would have cost $96.-568.90 more than it cost; I say done without State assistance, but let me remind you here that it has been waiting a mighty long time for State assistance, and the probability is that it would be waiting still had the State not come to the aid of these children. Like the poor that "you have always with you," there are thousands and tens of thousands of children whose growth and whose mental development is held back by physical defects so frequent in school children as to have earned the reference "common defects," and the burden is on this profession to reach these children in every way possible and to treat everyone that they can persuade to accept treatment, and the burden is upon the State to see that those who cannot be reached by the individual physician and the profession collectively are reached with its longer and stronger arm.

6 *Compulsory Social Insurance,* sometimes spoken of as sickness insurance or health insurance.

Compulsory social insurance may be defined as a form of insurance made compulsory by law for wage earners whose economic status is below a certain level.

The object of social insurance is to distribute the burden of sickness over the total period of productive labor of the individual worker rather than to rest suddenly and with crushing effect upon the individual or family.

As an illustration of how compulsory social insurance operates, we will consider briefly the English compulsory social insurance act. In England about 15,000,000, or a third of the population, come under the compulsory

social insurance act. The act applies to all wage earners and their families where the total annual income of the wage earner does not exceed, I believe, $840. Wage earners coming within the group pay 8 cents a week, the employer pays 8 cents a week, and the government 4 cents a week, thereby setting aside an insurance fund of 20 cents a week for each wage earner and his family to care for them and to protect them in case of sickness. I am not informed as to whether the war and the increased cost of living has affected the rates; but if it has, I presume that the three parties —wage earner, employer and the government—are still paying in the same proportion, 40 per cent apiece for wage earner and employer and 20 per cent for the government. The equity of this distribution of the insurance fund rests upon the fact that in case of sickness the employer is responsible for his employees and their surroundings, and is partly responsible for the sickness; the wage earner is also partly responsible for his own sickness, and the government is partly responsible for sanitary and hygienic conditions, and, therefore, for sickness; a further reason for the distribution of the insurance fund among the three parties is that all three parties are benefited in the prompt and effective treatment of sickness and, therefore, should share in the cost of the benefit. In a case of sickness of an insured wage earner or in case of sickness in his family, the sick person is treated free of cost, the government paying the bill out of the insurance fund; moreover, if during the wage earner's disability the family needs supplies, they are furnished by the government. The act protects very effectively against pauperism and charity practice. The fees to be charged by the physicians registered by the government to accept calls from the insured wage earner are determined by the government. In England the sick wage earner may choose his own physician from among those registered with the government; and, by the way, 22,000 of 25,000 English physicians accept these calls; that is to say, they are registered, or, as they say in England, are on the panels.

In connection with the operation of this law or with any compulsory social insurance law, a rather extensive referee system has to be maintained. Where the physician is paid fees for treating sickness of the insured, it would be comparatively easy for the unscrupulous physician and insured to run up a number of visits on the government and for the insured to remain out of employment and receive the benefits of the insurance an unnecessarily long time. In countries where physicians are paid a salary on a capitation basis, a referee system is needed to see that the insured wage earners do not take advantage of their privileges in calling on physicians for inconsequential ailments, and to see that physicians, when called to a case of sickness really needing attention, respond promptly.

As to the extent of social insurance, it may be said that some form of it is in operation in every country of Europe, with the exception of Turkey. In this country there is a considerable amount of optional, not compulsory, social insurance carried on by fraternal orders and by commercial enterprises, as, for example, in this State by the Atlantic Coast Line Railroad. Nine State governments have appointed commissions to study the subject and to make recommendations to their general assemblies with respect to action. The State of New York last year passed a compulsory social insurance bill in the Senate 30 to 20. The Governor supported the bill,

but the lower house defeated it. The people of California, in 1918, held a referendum on this issue, but defeated it about two to one. Many of the State commissions appointed to study social insurance have recommended some form of compulsory sickness insurance; no State has yet adopted it. Twenty-seven State Federations of Labor and twenty-six national trade unions have endorsed it. The American Federation of Labor has a committee studying the subject. It is understood, however, that Mr. Gompers and most of the labor leaders, John Mitchell of the United Mine Workers of America excepted, are opposed to social insurance. Mr. Gompers and his friends take the position that the wage earner should be paid enough so that he will not be dependent upon the government in sickness. The National Women's Trade Union League, the National Consumers' League, the American Association for Labor Legislation, the American Hospital Association, the National Conference of Jewish Charities, and the National Organization for Public Health Nursing have all endorsed the principle of social insurance. It is interesting to know that the British Medical Association, which almost called a strike in 1911 when the British social law went into effect, recommended in 1916 that the act be extended, and apparently the British Association, after five years' experience with compulsory social insurance, are favorable to the principle. Mr. Lloyd George has pointed out that the average physician's income has been increased under the provisions of the British act $750 a year. The American Medical Association, the State Health Officials and the American Public Health Association are maintaining an open mind on this question. A considerable amount of study is being given by these last named agencies to the subject. Some very able committees representing the last named agencies are making investigations and progress reports from time to time, but as yet none of the agencies mentioned have committed themselves for or against.

The advantages of social insurance are: (1) it distributes the burden of sickness and makes it, relatively speaking, easy to bear; (2) it does away with pauperism to a large extent; (3) it does away with charity practice; and (4) makes thrift compulsory. The disadvantage of social insurance, especially in a democracy, is that it classifies people, economically speaking; however, this is done by many of the laws that regulate taxes. Only certain persons pay income tax, and inheritance taxes, and the property tax is imposed according to ability to pay. To my mind the advantages of social insurance, or I will say some form of social insurance, outweigh its disadvantages; but I believe that, notwithstanding the many advantages, the prospects for compulsory social insurance in North Carolina are rather remote compared with the prospects of its getting a foothold in other sections of the country. Perhaps we shall have some form of social insurance in North Carolina within ten years from now; perhaps a little earlier, perhaps later. Now, the reasons for my saying that the movement will be delayed in reaching North Carolina are: First, when compulsory social insurance comes up in the South it will immediately become entangled with the race problem; the explanation is obvious. Second, when the matter is proposed for serious consideration in North Carolina, we will have to deal with the fact that compulsory social insurance has never been applied to a class of the self-employed, to an agricultural population. It is a measure designed for the wage-earning group, and so far in practice it has been

limited almost entirely to the wage-earning group. As we all know, North Carolina is about 90 per cent agricultural.

This question of social insurance is the biggest problem that concerns the medical profession, individually and collectively. It is a question that every physician should approach with an open mind and should carefully study before reaching a conclusion. The trouble in England was that the medical profession were unconcerned and took no interest in social insurance until the act was passed by the Government; then it was too late for them to inform themselves thoroughly and for them to have the influence in shaping the legislation that they would have had and that they should have had if they had waked up a little earlier.

I expect to see social insurance approach North Carolina in the form of a law which will make optional with the county the right to levy a tax for the care of sickness, to create a board to expend that tax in the construction and maintenance of hospitals and in the employment of a medical staff properly apportioned as to specialists and paid by salaries rather than fees. It is an interesting fact that as long as doctors are paid fees for sickness it is to their business advantage, although in direct conflict with their professional ideals, to have as much sickness as possible; whereas, the very minute the form of remuneration is changed from fees to salary and without changing the total remuneration per year a single mill, you completely reverse the business interest of the profession in sickness and make parallel the direction of both the physician's business and professional interests. A physician who hopes to collect $5,000 in fees in the present calendar year is dependent for the realization of his hope upon the occurrence of sickness. The same physician, paid a salary of $5,000 for taking care of the sick of a certain district or town or class, is not dependent upon sickness and is tremendously interested not only professionally, but as a business man, to see that sickness is prevented. It is to the interest of the profession that their interests, professional and business, should not be in conflict, as they are under present conditions, but parallel, and society can bring about this condition within the profession by changing not the amount of remuneration of physicians, but its form, in substituting salaries for fees.

Dr. A. J. Crowell, Charlotte:

I think the Medical Society of the State of North Carolina is to be congratulated upon having at the head of its public health work a man with such ideals and vision as Dr. Rankin. His efforts to prevent the spread of disease are commendable. Dr. Rankin's ideals are one hundred per cent efficient and have made for him a national reputation. North Carolina stands at the head of the list in her efforts in prevention of the spread of preventable diseases largely because of his vision and efforts.

We have in our midst this evening another man who is interested in the uplift of North Carolina along a different line, to whom I think we could well afford to listen, for at least five minutes, and I move that Col. Leroy Kirkpatrick be heard from on a subject in which he and the physicians of North Carolina alike are vitally interested.

Dr. Crowell's motion was seconded by Dr. Albert Anderson and passed.

Col. T. Leroy Kirkpatrick, Charlotte, N. C.:

I only ask five minutes of your time, to ask that you endorse a resolution

in the interest of a State System of Hard-Surfaced Highways. I do not make this request in my own behalf, but in the interest of the citizens of North Carolina.

Next to medicine and the uplift of the health and the education of the children of the Commonwealth, the construction of a State System of Hard-Surfaced Highways is the biggest question before our people.

The movement for a modern system of State Highways has been endorsed by every commercial body in North Carolina, by the newspapers, and by a majority of the educational institutions of the State and by almost every organized unit in North Carolina, and we feel sure of your endorsement.

I am not before you in behalf of my own selfish interest, but in the interest of the present generation and generations unborn, and to ask the most intelligent body in North Carolina to endorse this great movement.

North Carolina can pull herself out of the mud, because she has the money to do it. Her total taxable resources approximate five billion dollars; her banking resources four hundred million; her checking deposits ninety-six million; building and loans twenty-five million. Her citizens hold in Government securities two hundred million. And from her total resources from all crops last year approximated a billion and a half dollars. We are first in the manufacture of raw cotton; rank second as a manufacturing State in cotton goods; we are fourth as an agricultural State and twenty-third as a stock raising State.

The time has come when it is a disgrace to the good name of North Carolina to have her citizens driving through mud that is hub deep. We have a great western section of our State that is rich in natural resources in the way of minerals and timber, as well as agricultural advantages. We have a great east that offers as fine trucking facilities, because of the richness of the lands, as Florida. We have a great Piedmont section that stands second as a manufacturing center. But one section of the State is unacquainted with the other because we are not linked together by accessible, rapid and cheap transportation system.

If we expect to sell North Carolina commercially, invite emigrants to invest in our midst with their capital and become a part of us, we must put the State in a position to compete with Virginia, which has just voted sixty million dollars of bonds to build thirty-seven hundred and fifty miles of road. Maine has issued twelve million dollars of bonds; Maryland, sixty million; Illinois, sixty million. Georgia is submitting a constitutional amendment providing for fifty million dollars of bonds. Kansas proposes ten thousand and seven hundred miles of hard-surfaced roads; Arkansas has a hundred-million-dollar program, covering more than seven thousand miles of road; Missouri proposes a sixty million dollar bond issue; Pennsylvania has voted one hundred and twenty-five million dollars of bonds; Oklahoma, sixty million.

Now, North Carolina, religiously, agriculturally and industrially, cannot enter into a friendly competition with these States without offering them, through a State system of modern highways, like benefits.

Our North Carolina boys, through their patriotic efforts, gave a new interpretation to the constitution and added a new halo of glory to the flag. Many of them made the supreme sacrifice and broke the Hindenburg line.

But we, as yet, have not broken the line of sickness, the line of illiteracy or the mud line, and the time has come to do it.

Dr. Cyrus Thompson, Jacksonville:

Mr. President, I never like to talk on limited time. It is like fighting. There is no particular objection to fighting except that you have to do so much of it in such a little while, or it is not worth while to do anything.

I am interested in the matter of good roads, and I am going to introduce directly a resolution, by request. I consented to introduce the resolution because of the fact that I am interested in this subject.

I was sitting yesterday at dinner at the Rotary Club next to a man by the name of Thomson. I said to him, "How do you spell your name?" He said, "T-h-o-m-s-o-n." "Son of Thomas." I said, "That is not mine." He said, "It is the same name, isn't it?" "No," I said, "it is not the same. My name is T-h-o-m-p-s-o-n, which was spelled originally Thompstone or Thumpstone." Away back yonder, you see, my ancestors were interested in good roads, perhaps from criminal necessity. They helped to break the rocks to make hard roads, and so originated the "Thompson with a p." Etymology and imagination assure me of this fact. I am not saying that little about my original ancestors by way of detraction; I don't suppose that yours were any better than mine. You see all our ancestors were bad—even the suffragette portion was bad; Adam testified to that. The only thing that any of us have to pride ourselves on is that we are better than our ancestors. We have made progress and are still making progress. Let us hope that the best is yet to come.

Now, Colonel Kirkpatrick asked me to introduce this resolution, and I have explained to you why I consented to do it:

> "Be it Resolved:
>
> FIRST: That the State Medical Society of North Carolina, in meeting assembled, heartily endorse the construction of a State System of Modern Highways.
>
> SECOND: We urge the members of the General Assembly of North Carolina, when they meet in extra session, to devise the necessary ways and means to build a State System of Modern Highways. And that said funds be equitably and impartially distributed to the several counties of the State.
>
> It is the sense of this meeting that a copy of this resolution be forwarded by its secretary to Honorable T. W. Bickett, Governor of Noth Carolina.

I do not see that we could hurt anything much by endorsing this. We all want to make progress and have better roads.

I just wish to say a word about Dr. Rankin's paper, which is an immensely progressive paper. He has in him a vision, a sort of idealism. He senses the spirit of the times. The idea of progress is rampant all through the world and we are coming on to new things. Whether we can get something higher and better than what we have or shall go off the log in one infernal crash, God Almighty knows. But we are getting away from individualism the world over and getting toward socialism. There is a

whole lot here and I would love to talk longer about it, but I cannot. A simple suggestion in conclusion. When I was a young man, no campaign was made in North Carolina that was not ridgepoled upon States' rights. But you have not heard that doctrine in years until some fellow who did not want women to vote brought up the question. This is a union, an indissoluble union, of sovereign States, to be sure, but they are merged into one union, the greatest commonwealth on earth.

I am going to stop; but I wish I had time to run on a little longer.

Dr. M. Eugene Street, Glendon:

It is a great pleasure to me to see the State Medical Society, after eighteen years, take up the subject of Good Roads. By reference to the Proceedings of the State Medical Society at the Wrightsville meeting, 1902, you will see that a paper on the subject was read there, the first paper on this subject before this Society in all its history. The Society very enthusiastically wanted the author of that paper to go to the Legislature. From that day to this I do not think there is any record of the Society's having gone on record for good roads, but I do hope that it will unanimously so go on record now.

Dr. Crowell:

Dr. Thompson read the resolution, but did not move its adoption. I take great pleasure in moving that the resolution be adopted.

This motion was seconded, and the resolution was adopted as read. After this the session adjourned.

THURSDAY, APRIL 22ND, 11 A. M.

President, Dr. C. V. Reynolds, in chair.

The House of Delegates presented the report of the Nominating Committee, as adopted by it, for the approval of the General Session. (See report of Nominating Committee to House of Delegates, pages 294 and 295).

In reporting the place of meeting for 1921 as Pinehurst, the House of Delegates reported that the local medical profession in Moore County would not be expected to furnish any entertainment. The time of meeting was left to the discretion of the President and Secretary, in order that satisfactory arrangements as to time could be made with the management at Pinehurst.

On motion, the report from the House of Delegates was approved.

The President, Dr. Reynolds, requested Drs. J. F. Highsmith and I. W. Faison to escort to the chair Dr. T. E. Anderson, President-elect. With a few felicitous remarks, the retiring President inducted Dr. T. E. Anderson into office.

Dr. T. E. ANDERSON:

To the Medical Society of the State of North Carolina:

Gentlemen:—

In accepting this distinguished honor which your kind indulgence has placed upon me, I could wish that I had the gift of tongues to adequately express my appreciation of it. These brave, true, noble men entrusted with the obligation to make these selections, perhaps, have been governed

more by their brotherly feelings towards me than by their best judgment. These were good men and, I think, fairly familiar with the Holy Scriptures, but I fear they did not give the solemn scriptures due consideration, which says: "There is a way which seemeth right unto a man, but the end thereof is death." In the early days of air flying the papers alluded to those ventures as "flirting with death."

The Methodist Episcopal Church has always boasted that they have never made a mistake in the selection of their bishops. Up to this time that boast might have been made by the North Carolina Medical Society, but the future looks dark to me just now. However, the depth of my gratitude must remain unspoken. It is said "Out of the abundance of the heart the mouth speaketh." I wish that the heart had a language of its own, that it might indulge in unrestrained flowing speech in acknowledgement of this honor.

Some years past it was my great pleasure and fortune to stand in the spacious Hall of the famed Ducal Palace at Old Venice and contemplate this splendid and well preserved relic of Medieval Architecture and splendor. Among the many things which hold the attention of the visitor is the row of pictures of the Doges once directing her destinies arranged around the upper walls, one frame only being vacant. This, it is explained, was on account of the treachery and villainy of one of her citizens holding this high place; this vacant frame forever publishes his infamy. In the Palace of the Memories of the members of the North Carolina Medical Society, the frame allotted to me, enrolling me as one of your Presidents, will not be vacant if a lifetime of love and devotion to all her ideals and interests can place my image there.

I will simply conclude by telling you that this is an honor which I never entertained in all my aspirations, because of a felt unfitness for it and that there were many more deserving of it than I. Gentlemen—I thank you most profoundly and ask your kind indulgence and help in discharging the duties involved.

On motion of Dr. J. F. Highsmith, of Fayetteville, the appreciation and thanks of the Medical Society of the State of North Carolina were extended to the Mecklenburg County Medical Society; to the Ladies' Enteratinment Committee, who made the stay of the visiting ladies so delightful; to the Committee on Arrangements, Dr. B. J. Witherspoon, the efficient chairman, being included, as was also Dr. John Q. Myers, chairman of the Hotel Committee; and to the Masonic Order for the use of their magnificent temple as a meeting place.

On motion of Dr. J. E. Brooks, of Blowing Rock, the thanks of the Medical Society were tendered our retiring President, Dr. C. V. Reynolds, for the efficiency, courtesy and kindness with which he had conducted the proceedings of the convention.

At the first meeting of the new Board of Medical Examiners of North Carolina the following officers were elected and the following subjects assigned:

Anatomy and Embryology: Dr. L. A. Crowell, President, Lincolnton, N. C.

Obstetrics, Gynecology and Pediatrics: Dr. K. P. B. Bonner, Secretary-Treasurer, Morehead City, N. C.

Chemistry, Hygiene and Physiology: Dr. W. M. Jones, Greensboro, N. C.

Bacteriology, Histology and Pathology: Dr. C. A. Shore, Raleigh, N. C.

Materia Medica, Therapeutics and Pharmacology: Dr. J. G. Murphy Wilmington, N. C.

Practice of Medicine: Dr. W. P. Holt, Duke, N. C.

Surgery: Dr. L. N. Glenn, Gastonia, N. C.

Proceedings of the House of Delegates

TUESDAY, APRIL 20TH, 2:30 P. M.

The House of Delegates was called to order by the President, Dr. C. V Reynolds. The roll of counties was called, and representatives answered as follows:

Alamance, C. M. Walters; Alexander, (see Iredell-Alexander); Alleghany, not represented; Anson, not represented; Ashe, not represented; Avery, W. B. Burleson; Beaufort, S. T. Nicholson; Bertie, not represented; Bladen, E. S. Clark; Brunswick, not represented; Buncombe, H. H. Briggs D. E, Sevier and Thompson Frazer; Burke, I. M. Taylor; Cabarrus, not represented; Caldwell, A. B. Goodman; Camden, (see Pasquotank-Camden-Dare); Carteret, K. P. B. Bonner; Caswell, not represented; Catawba, not represented; Chatham, not represented; Cherokee, N. B. Adams; Chowen-Perquimans, J. S. Mitchener; Clay, (see Macon-Clay); Cleveland, E. B. Lattimore; Columbus, not represented; Craven, not represented; Cumberland, J. F. Highsmith; Currituck, not represented; Dare, (see Pasquotank-Camden-Dare); Davidson, C. A. Julian; Davie, not represented; Duplin, John W. Carroll; Durham-Orange, B. W. Fassett and Foy Roberson; Edgecombe, C. L. Outland; Forsyth, D. L. Dalton; Franklin, S. P. Burt; Gaston, James A. Anderson; Gates, not represented; Graham, not represented; Granville, not represented; Greene, John L. Carroll; Guilford, John W. Long, J. T. Burrus and D. A. Stanton; Halifax, P. C. Carter; Harnett, W. P. Holt; Haywood, J. Howell Way; Henderson-Polk, not represented; Hertford, not represented; Hoke, L. B. McBrayer; Hyde, not represented; Iredell-Alexander, M. R. Adams; Jackson, not represented; Johnston, not represented; Jones, not represented; Lee, W. A. Monroe; Lenoir, W. F. Hargrove; Lincoln, W. F. Elliott; Macon-Clay, S. H. Lyle; Madison, W. A. Sams; Martin, B. L. Long; McDowell, J. F. Jonas; Mecklenburg, B. J. Witherspoon; J. E. S. Davidson, R. Z. Linney, and L. W. Hovis; Mitchell-Watauga, C. E. Smith; Montgomery, not represented; Moore, M. Eugene Street; Nash, not represented; New Hanover, J. G. Murphy; Northampton, L. E. McDaniel; Onslow, Cyrus Thompson; Orange, (see Durham-Orange); Pamlico, not represented; Pasquotank-Camden-Dare, R. L. Kendrick; Pender, not represented; Perquimans, (see Chowan-Perquimans); Person, not represented; Pitt, Chas. O'H. Laughinghouse; Polk, (see Henderson-Polk); Randolph, T. I. Fox; Richmond, not represented; Robeson, W. E. Evans; Rockingham, J. B. Ray; Rowan, J. L. Monk; Rutherford, D. R. Schenck; Sampson, G. L. Sikes; Scotland, not represented; Stanly, not represented; Stokes, R. G. Tuttle; Surry, J. B. Smith; Swain, A. M. Bennett; Transylvania, not represented; Tyrell, (see Washington-Tyrell); Union, S. A. Stevens; Vance, not represented; Wake, T. M. Jordan and J. B. Wright; Warren, not represented; Washington-Tyrell, Joseph L. Spruill; Watauga, (see Mitchell-Watauga); Wayne, not represented; Wilkes, J. E. Duncan, C. S. Sink, alternate; Wilson, K. C. Moore; Yadkin, not represented; Yancey, J. B. Gibbs.

The Secretary read his report. On motion, the same was accepted and the financial part was referred to the Finance Committee.

REPORT OF THE SECREARY-TREASURER TO THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA.

Early following the close of the last session the Secretary notified all officers and committees of their appointment. He has also notified committees that were to report to this session.

MEMBERSHIP.

On page 302, Transactions for 1919, we estimated in our report of one year ago that we would probably be able to get 1,200 paid-up members. The record shows that we had 1,213 plus 93 Honorary Fellows—1,306 members, the largest number by a few of any year in the history of the Society. We have today 1,115 paid-up members, which number plus the Honorary Fellows gives us 1,217 members. This is the largest paid-up membership by far that we have ever had at the convening of the Society. This is an indication, I take it, that a goodly number of doctors in North Carolina are taking more interest in the organized medical profession. We are hoping that we may add at least 200 more names to this roster before the Transactions go to press, and we certainly ought to have 500. May we express the hope that at least a few influential men in each county will interest themselves sufficiently to get the doctors in their county now out to come into their county society. The Secretary will be writing you about it when this meeting is over.

IN REGARD TO FINANCES.

You will find appended hereto the report of the Treasurer. You will note that all bills have been paid, except for printing program, which statement has not yet been received. You will note that the bank statement shows a balance of $1,565.92 as against $564.34 last year, an increase of one thousand dollars over last year. Part of this, however, is taken up in the larger percentage of members in good standing.

As mentioned last year, we are gradually reducing our deficit. After a careful study of our assets and liabilities, we find that we can probably reduce our deficit by about $300 annually, provided we do not increase our expenses. You will no doubt be pleased to learn that our deficit now does not give us any particular trouble, for the reason that try hard as we can, we cannot get the printer to give us the Transactions until well along in the winter, contracts to the contrary notwithstanding. So that the dues for the succeeding year enable us to finish paying for the Transactions without a great deal of delay and without becoming liable for interest charge.

CORRESPONDENCE

The correspondence is necessarily large. We feel today that we ought to have done more. We feel that the officers and councilors could even do more than we have been doing if we kept in closer touch with the doctors of the State, members and non-members. We have sent out from the office 986 personal letters and 9,354 multigraph or printed letters, some of these letters without expense to the Society for postgge.

DELINQUENT COUNTY SOCIETIES.

The following societies have not reported or paid dues for their members for 1920: Burke, Chowan-Perquimans, Craven, Gaston, Macon-Clay,

Montgomery, Rockingham, Scotland, Swain, Transylvania, Yadkin. This represents 11 societies and 109 members as per last year's report. We take it that these 11 counties are not entitled to representation in the House of Delegates, nor are any physicians resident in these counties entitled to hold any office in the gift of this Society. (See Chapter 1, Section II, and Chapter 11, Sections I and II, By-Laws.)

PROGRAM.

No doubt the program will commend itself to you as one among the best presented to this Society. I desire to say that the chairmen of sections are entirely responsible for the same, and are due the thanks of the officers and members of our Society.

All of which is respectfully submitted.

(Signed) L. B. McBRAYER,
Acting Secretary-Treasurer.

April 16, 1920.

TREASURER'S REPORT.

April 12, 1919, to January 1, 1920.

Balance April 12, 1919, as per statement in Transactions, p. 30+	$ 564.34
Dues	1,159.50
Total Receipts	$1,723.84

ITEMIZED DISBURSEMENTS

April 12, 1919, to January 1, 1920.

Check No.		
17	Western Union T. Co. (telegrams)	$ 2.65
18	Dr. T. W. Shore (refund dues)	3.00
19	Western Union T. Co. (telegrams)	7.85
20	J. T. Jerome (rent moving picture Pinehurst)	9.50
21	Void	
22	Miss Mary Robinson (reporting meeting)	49.98
23	Commercial Printing Co. (program)	163.50
24	Western Union T. Co. (telegrams)	.81
25	Western Union T. Co. (telegrams)	10.02
26	Dr. J. L. Ransom (refund dues)	3.00
27	Dr. J. T. J. Battle (excess dues returned)	.50
28	Mrs. T. W. Adickes (reporting meeting)	59.61
29	Dr. R. C. Matheson (refund dues)	3.00
30	Dr. B. B. Lloyd (refund dues)	3.00
31	Mrs. M. L. Murray (reporting meeting)	68.29
32	Dr. W. L. Dunn (refund dues)	3.00
33	Mrs. T. W. Adickes (reporting meeting)	53.73
34	Dr. C. W. Cocke (refund dues)	3.00
35	Miss Mary Robinson (reporting meeting)	84.40
36	Edwards & Broughton (reprint President's address)	98.15
37	Miss Mary Robinson (reporting meeting)	48.07
38	Mr. T. B. Eldridge (proof reading)	22.50
39	Edwards & Broughton (acct. Transactions)	1000.00
	TOTAL	$1697.56
	Balance January 1, 1920	$ 26.28

TREASURER'S REPORT.

Jan. 1, 1920, to April 16, 1920.

Balance from 1919	$ 26.28
Interest on $1000.00 from April 24, 1919, to Jan. 1, 1920	26.67
Dues	3478.00
Total Receipts	$3530.95

ITEMIZED DISBURSEMENTS

Jan. 1, 1920, to April 16, 1920.

Check No.		
40	Western Union T. Co. (telegrams)	$ 1.41
41	Dr. J. H. Harper (refund dues)	3.00
42	Commercial Printing Co. (secretaries' reports)	23.50
43	Edwards & Broughton (Transactions)	522.27
44	Void	
45	Edwards & Broughton (Transactions)	601.01
46	Void	
47	Postmaster (stamps)	127.41
48	Dr. L. B. McBrayer (salary Sec.-Treas.)	600.00
49	A. W. Snow (clerical help)	25.00
50	Letitia Thorpe (clerical help)	10.00
51	L. Mayhew (clerical help)	10.00
52	Dr. Turner (refund dues)	3.00
53	Commercial Printing Co. (announcements)	12.23
54	Dr. Paul G. Parker (refund dues)	3.00
55	Western Union T. Co. (telegrams)	20.20
56	Dr. A. S. Jones (refund dues)	3.00
	Total	$1965.03
	Balance April 16, 1920 (on deposit with Page Trust Co.)	$1565.92

Burke County not having made a report, Dr. I. M. Taylor, Honorary Fellow, being present, on motion was allowed to stand good for five members from his Society and was seated as a delegate.

Dr. Charles O'H. Laughinghouse reported for the committee on Midwives. Report as follows:

REPORT OF COMMITTEE ON REGULATION OF WORK OF MIDWIVES.

Your Committee finds that the midwives are in attendance at 30,000 of the 80,000 births that occur annually in North Carolina.

Your Committee is of the opinion that under present conditions it is impracticable, as well as impossible, for the State to prohibit attendance on obstetrical cases by midwives. Your Committee believes that because of extensive interest now shown by many States in the form of proposed legislation for maternity benefits and care, that in no distant time pregnancy and obstetrics will be accepted as a public responsibility and care at least to a limited extent, and that when this public recognition of the

necessity of better professional service for pregnancy and obstetrics arrives, the problem of midwifery will be effectively solved.

Under present conditions your Committee recommends:

(1) That the North Carolina State Board of Health shall prepare, or have prepared, and published a simple primer on midwifery for the use of midwives.

(2) That the State Board of Health prepare a standard county regulation for the control of midwives, for adoption by counties, with the effect of law, as provided for in section 9, chapter 62, Public Laws of 1911, as amended.

(3) That the regulations above mentioned require that midwives be given a permit when they are able to stand a successful examination on the aforementioned primer, to be given by the whole-time county health officer or nurse.

(4) That the aforesaid permit be a conditional permit, conditioned: (a) upon the midwife's compliance with the State laws relating to the practice of midwifery; (b) that the midwife shall refrain from making vaginal examinations; (c) that the midwife decline to attend and that she refer to registered physicians, when the information is in her possession in time to do so, the following kind of cases: (1) cases of pregnancy or obstetrics that have suffered considerably with premonitory symptoms of eclampsia, as stated in the primer; (2) cases of pregnancy with a history of difficult labors; (3) cases of pregnancy or obstetrics with collapsed parts or abnormal positions.

On motion report was adopted.

The Committee on Single Examining Board was continued.

Dr. J. E. S. Davidson moved that the Secretary be instructed not to print the Transactions of the State Health Officers' Association in the Transactions of the Medical Society. After remarks by Drs. Cyrus Thompson, I. M. Taylor and Charles O'H. Laughinghouse, Dr. Thompson moved to lay the motion on the table, which was seconded by Dr. J. Howell Way and carried unanimously.

Dr. J. W. Long moved that Dr. J. B. Councill of Salisbury be placed on the roster of Honorary Fellows; motion to lay on the table, carried. Dr. J. W. Long moved that a committee be appointed to look into and report on the status of Dr. J. B. Councill. Carried. In pursuance of Dr. Long's motion, the chair announced the following committee: Dr. J. W. Long, Dr. Cyrus Thompson. (Later—Dr. Councill has paid back dues and is now an Honorary Fellow.)

The President requested the delegates from each of the ten districts to get together and select a member of the Nominating Committee from their district, and announced a recess of five minutes for such purpose. At the end of the five minutes the President called the House of Delegates to order and the members of the Nominating Committee were announced by the delegates from the different districts as follows:

First District ----------Joseph L. Spruill
Second District ----------Chas. O'H. Laughinghouse
Third District ----------J. G. Murphy
Fourth District ----------K. C. Moore
Fifth District ----------J. F. Highsmith
Sixth District ----------J. B. Wright
Seventh District ----------J. E. S. Davidson
Eighth District ----------J. T. Burrus
Ninth District ----------M. R. Adams
Tenth District ----------H. H. Briggs

No further business occurring, on motion the House of Delegates adjourned, subject to the call of the President.

HOUSE OF DELEGATES.

Thursday, April 22, 10:30 A. M.

The President, Dr. C. V. Reynolds, presiding.

The report of the Committee on Nominations was presented by Dr. Charles O'H. Laughinghouse:

President: Dr. Thomas E. Anderson, Statesville.
First Vice-President: Dr. C. S. Lawrence, Winston-Salem.
Second Vice-President: Dr. W. H. Ward, Plymouth.
Third Vice-President: Dr. John M. Manning, Durham.

Committee on Scientific Work.

Dr. E. J. Wood, Wilmington.
Dr. Richard Duffy, New Bern.
Dr. C. A. Shore, Raleigh.

Committee on Publication.

Dr. P. P. McCain, Sanatorium.
Dr. C. A. Julian, Thomasville.
Dr. W. L. Dunn, Asheville.

Obituary Committee.

Dr. E. J. Wood, Wilmington.
Dr. B. S. Edwards, Asheville.
Dr. N. D. Betting, Durham.

Public Policy and Legislation.

Dr. H. A. Royster, Raleigh.
Dr. L. B. McBrayer, Sanatorium.
Dr. Cyrus Thompson, Jacksonville.

Finance Committee.

Dr. J. W. Long, chairman, Greensboro.
Dr. E. S. Bullock, Wilmington.
Dr. E. B. Glenn, Asheville.

Delegates to A. M. A.

Dr. John Q. Myers, Charlotte.
Dr. A. S. Boice, Rocky Mount.

Alternates:

Dr. C. L. Minor, Asheville.
Dr. Isaac M. Taylor, Morganton.

Delegates to Virginia Medical Society.

Dr. Fred Hanes, Winston-Salem.
Dr. R. L. Kendrick, Elizabeth City.
Dr. B. C. Nalle, Charlotte.

Delegates to the S. C. Association.

Dr. D. A. Stanton, High Point.
Dr. W. A. Monroe, Sanford.
Dr. W. R. McCain, Waxhaw.

The report was adopted.

The following telegram from Mr. N. Buckner, Secretary of the Asheville Board of Trade, was read:

Asheville, N. C., 4-21-20.

Dr. C. V. Reynolds,
State Medical Association,
Charlotte, N. C.:

Asheville Board of Trade heartily joins Asheville and Buncombe County doctors in invitation to State Medical Association to meet in Asheville next year, and will co-operate with you in every way to make meeting success.

N. BUCKNER, Sect'y.

Dr. Laughinghouse stated that Pinehurst had been recommended in the report of the committee on nominations as the next meeting place of the Society because that was the only town which had extended an invitation at the time the report was made up.

The report of the committee on the President's address was presented by Dr. Laughinghouse, as follows:

" Your committee to whom your president's address was referred begs to report that the address contains information on a subject that is now in process of evolution. The message is of such nature as to compel the conclusion that nothing less than the highest type of altruism, refined and perfected by a most careful study, could have prompted it.

"The class of legislation referred to in this address is of such a nature that it behooves the profession to keep constantly informed regarding it; therefore, it is recommended that a committee be appointed consisting of the President of the Board of Health of the State of North Carolina, the President of the Board of Medical Examiners for the State of North Carolina, and the President of North Carolina Hospital Association, whose duty it will be to keep in touch with the vital questions contained in this address and report its findings to the Society at its next annual meeting.

"It is further recommended that this committee be continued from year to year, making its report to the Society at its annual meetings, until such a time as the Society deems it wise to discontinue the committee.

(Signed) "Chas. O'H. Laughinghouse.
"John M. Manning.
"B. L. Long."

The report of the above committee was adopted unanimously.

Dr. K. P. B. Bonner presented the report of the Board of Councilors, as follows:

"As customary, the Board of Councilors beg leave to report upon the work of the Board as a whole as well as the situation of the medical organization in each councilor district.

"Aside from the routine work of settling disputes arising among physicians throughout the State, the most important function of the Board of Councilors is the conservation and promotion of the organization of medical men. The report of the Acting Secretary, Dr. McBrayer, on the first day of your meeting bears testimony to the present condition of the Society. Never in the history of its organization has there been such a large membership. It is true that some counties have failed to report and remit dues for their membership, and this condition may be explained. Upon investigation the Board has found that, practically without exception, these derelictions were occasioned by conditions existing locally in the county which were beyond the power of the local councilor to influence. Sooner or later the Board as a body is called upon to act in these cases, but it is impossible for the Board to handle these matters until brought officially to its attention.

"The Board of Councilors respectfully calls the attention of the House of Delegates to the fact that the name of Dr. William Sharp, of New York, who was elected to honorary membership at the last meeting, was by some oversight omitted from your list of honorary members.

"Respectfully submitted,

(Signed) "K. P. B. BONNER, Secretary."

The report was adopted.

Dr. Laughinghouse: As one of the members of the Nominating Committee I would like to have the place of meeting brought before the House of Delegates, for this reason, that we got an invitation from Asheville after we had already acted on the proposition, and if in the judgment of the House of delegates it is wiser to accept Asheville's invitation I would like to leave it open.

Dr. Bonner moved that the report of the Nominating Committee be reconsidered with reference to the next place of meeting. The motion was seconded, but not carried.

The following telegram from the Southern Medical Association was read:

Birmingham, Ala., April 21, 1920.

North Carolina State Medical Association, in Convention Assembled,
Charlotte, N. C.:

Greetings. Our best wishes for a great meeting.

SOUTHERN MEDICAL ASSOCIATION,
Seale Harris, Sec'y. Editor.

Dr. M. L. Stevens of Asheville, Dr. J. F. Highsmith of Fayetteville, and Dr. J. M. Parrott of Kinston, were appointed by the President on the committee requested by Dr. Hubert A. Royster, Secretary of the Board of Medical Examiners, to receive and handle the funds of the Examining Board.

The House of Delegates then adjourned.

Memorial Exercises

DR. W. P. MERCER.

Read By Dr. E. G. Moore, Elm City.

Dr. Mercer was born in Edgecombe County, North Carolina, March 16, 1855, and died at his home near Elm City, N. C., May 28, 1919, after a severe illness of influenza. Thus passed from action another of the State's oldest physicians of wide repute and ability, and a genuine friend of man.

Dr. Mercer was the son of John Routh Mercer, his mother being Miss Susan Margaret Vick. He married Miss Mary Speed Jones, of Warren County, North Carolina, who with five children survive him.

Dr. Mercer graduated from Trinity College in the class of 1877. In the fall of 1877 he entered the medical class of the University of Virginia. He received his medical diploma from the University of the City of New York in 1879. The same year he located at his old home in Edgecombe County for the practice of his profession. He was a member of the Edgecombe County Medical Society; received his license from the Examining Board in 1879, and joined the State Medical Society in 1879. He represented his county in the State Legislature two terms. He was a member and medical examiner of the Local Exemption Board for Edgecombe County.

Information furnished by Mrs. W. P. Mercer.

Mr. Howard F. Jones pays the following tribute taken from the "Warren Record" :

Feeble words cannot convey the love and esteem in which Dr. W. P. Mercer was held by those who knew him intimately; but I desire to give expression in the columns of this paper to the pleasure that years of intimate association with him have given me, and to my deep regret at his untimely death. Having married my sister, of course I have known him and known of him for a number of years; but I did not know him intimately until I became an inmate of his home while I engaged with him in constructing various telephone toll lines and systems in Eastern Carolina. I have never known a more unselfish man. I have never known a more devoted husband or father, or better friend to man. If Dr. Mercer had never made an open profession of religion and associated himself with the church, his name, like that of Abou Ben Adhem's, "would lead all the rest, because he loved his fellow-men."

If "Inasmuch as ye did it unto the least of these, my brethren, ye have done it unto Me" brings its reward on earth and in Heaven, Dr. Mercer is twice blest. If ministering unto the sick and going about doing good broadens and deepens character, Dr. Mercer's character was of unmeasured depth and breadth.

Dr. Mercer filled any position he attempted. He was not a little man in any sense. He did not "rattle round." The place was often not big enough for the man, and whether it was making an annual address at the North Carolina Medical Society, or serving his county as State senator, or meeting his brethren of the profession in consultation, he towered above the rest. There was not a more proficient diagnostician in his profession, and as one who eulogized him at the simple funeral said, he was almost un-

canny in medicine. And with it all he was unassuming. A graduate of Trinity College in the class with Senators Simmons and Overman and Representative Small; a graduate in medicine of the Department of Medicine of the University of Virginia, a graduate of medicine of the University of Medicine of the City of New York, an interne for two years at Bellevue Hospital, New York, laid the foundation for a man of large brain and common sense to build upon towards the pinnacle of the profession. That he reached this pinnacle is not denied.

That he laid down his life in the discharge of duty without thought of financial reward is admitted. As member of the War Board, his duties were arduous. During the severe winter of 1917-18 he drove day after day fifteen miles to discharge his duties as Examining Physician, and then when the day's work was over would visit his patients far into the night. But this was not the cause of his collapse. The influenza epidemic came on, and his sense of duty kept him going when the flesh was so weary that he could scarcely go at all, and in this condition the disease fastened upon him and yet he would not stop—"for these people will die if someone does not look after them." Day after day he and his associate, Dr. Jones, would see more than a hundred cases per day, and speaking to me from his bed of sickness he said, "I became so weak that I would fall out of my car when I attempted to get out." And a horny-handed neighbor said at his funeral, with sobs in his voice: "He came to see my little children when he was so pale and weak he could hardly stand up." And thus a good man closed his earthly career—doing his duty, giving his best to that duty and leaving an heritage to his family and his community that should be an inspiration.

My friend has crossed over the river. I have never had a better friend, nor loved one more. Sweet are the recollections of that friendship, firm is my faith that he has gone to receive a just reward for the many good deeds done to those who passed his way. If ever he refused a call for his services, or to give physic to those who asked, regardless of ability to pay, it is not known to me. This was the testimony of those who knew him best.

His funeral was conducted by Rev. M. Bradshaw, of Durham, a classmate, assisted by Presiding Elder C. L. Read, of Kinston, and Mr. Poole, the local minister.

Wednesday evening, May 28, at 5:30 o'clock, he suddenly passed away while in animated conversation with his daughter, and from the serene expression of his countenance he opened his eyes upon a land

"Where everlasting spring abides
And never withering flowers:
Death like a narrow sea divides
This Heavenly land from ours."

DR. E. M. M'COY.

Dr. E. M. McCoy died suddenly at his residence in Charlotte, N. C., May 28, 1919. Dr. McCoy was a well known physician in this city, and for quite a while was city physician.

He was a graduate of the medical department of Davidson College and received his diploma in 1892, and immediately afterwards received his

license to practice medicine in this State. For 26 years he was an intelligent, active and successful practitioner.

Taken from the Charlotte Medical Journal.

DR. J. A. J. PENNY.

Read by Dr. J. M. Templeton, Cary.

Dr. Penny was the son of Sandy Penny and Miss Betsy Adams, of Wake County. He was born January 10, 1843, in Wake County, and died at his home, Neuse, near Raleigh, May 30, 1919. He attended the University of North Carolina one or two terms; entered the University of New York, Medical Department, and graduated in the class of 1861. He served in the Confederate Army in the Fourth and Fourteenth Regiments, North Carolina troops. After returning from the army, he located at Neuse. He obtained his license from the State Medical Examining Board in 1885, and joined the North Carolina Medical Society in 1904. He was also a member of the Wake County Medical Society. He was in active practice for nearly fifty years. In 1865 he married Mary Elizabeth Allen, who died several years ago. They raised a large family of children, the following surviving them: Mrs. Eva C. Ray, Wake County; O. B. Penny, Raleigh; E. O. Penny, Wake Forest; Mrs. J. H. McGhee, Franklin County; Mrs. W. J. Bailey, Wake County, and Mrs. J. C. Rogers, Durham, N. C.

Information furnished by Dr. W. C. Horton, Raleigh, N. C.

DR. T. EVANS McBRAYER.

Read by Dr. C. A. Julian.

In the death of Dr. T. Evans McBrayer on June 24, 1919, at Shelby, N. C., Cleveland County lost one of its oldest and best known physicians.

Dr. McBrayer was born December 3, 1848, near Shelby, N. C. He was educated at Catawba College, graduating in 1868, and received his first medical training at Washington University, Baltimore, Md. (later known as Baltimore College of Physicians and Surgeons), graduating in 1875. Later he took post-graduate courses in the Polyclinic of New York and in Philadelphia.

Following his graduation in 1875, Dr. McBrayer began a practice in Gaston County, North Carolina, going from here to Lebanon, Tex., where he remained for a short time before returning to Shelby, Cleveland County, and continued his practice for nearly 45 years. In 1885 a license to practice medicine in North Carolina was granted him and he joined the State Medical Society in 1904. He was a member of the Cleveland County Medical Society and the American Medical Association and also of the A. F. and A. M., I. O. O. F. and K. of P. He was a pioneer thinker and in his practice kept abreast of the advances made in medical and surgical science, being first in Cleveland County to use the Diphtheria Antitoxin, the hypodermic syringe and fever thermometer. He unquestionably had the largest clientele of any physician in that section of the State.

The doctor was a man of wide influence in the civic affairs of the county. He was a man of strong personality, and it has been said of him that "Possibly he had fewer enemies and a larger number of friends than any other individual in Cleveland County."

Dr. McBrayer was twice married, the first time to Miss Sallie Webb, daughter of Mr. and Mrs. David C. Webb. To this union the following children survive: Lieut. Col. Charles Evans McBrayer, M. D., Medical Corps, U. S. Army; Mayor Claud B. McBrayer, of Shelby; Mrs. Ollie Minor, of Washington, D. C. His second marriage was to Miss Lizzie Allen, of Kinsdale, Va., who survives with the following children: Dr. Allen McBrayer, of Quincy, Fla.; Eugene McBrayer and the Misses Frances and Miriam McBrayer, of Shelby.

Information furnished by Dr. B. H. Palmer, Shelby, N. C.

DR. EDWARD W. CURRIE.

(Read by C. W. Choate.)

In the death of Dr. Edward W. Currie the medical profession lost an able doctor and the Rowan County Medical Society lost a faithful member and a loyal friend. Having by right of inheritance those qualities that go to make the gentleman, Dr. Currie never failed to reflect credit on his gentle birth, and to carry on the noble traits that we so love to see in the true Southern gentleman. He was ethical to the core, and his fellow-practitioner always had the feeling that he would be treated fairly and with courtesy when he was associated professionally with Dr. Currie. He was rather a frail man, but actuated by the desire to serve his patients well and to be a force for good in his chosen work, he always responded to the call cheerfully and promptly, and seldom or never did a brother practitioner call upon him in vain, night or day. In the sick room his quiet, modest manner quickly won the confidence and respect of his patient and established for him a loyal patronage.

Dr. Currie was born in Hillsboro, N. C., October 17, 1877. He was the son of a Presbyterian minister. His early education was received at Fredericksburg (Va.) Institute. He attended Davidson College later. In 1906 he graduated from the North Carolina Medical College. Licensed to practice the same year, he located at Dobson, later coming to Salisbury in 1910, where he lived until his death. Dr. Currie was a member of the Rowan County Medical Society, being its president at the time of his death. He was also a member of the State Medical Society and the American Medical Association. Dr. Currie never married.

Dr. Currie's death occurred June 26, 1919, during a visit to his old home. It was a singular blessing that his last days should have been spent among those he loved. It seems sad that this able young physician should be called to go so soon. As a friend, Dr. Currie was devoted, loyal and kind; always willing to lend a helping hand. He stood always for principle, and with it never failed to be courteous and to be a gentleman. He lies buried near his mother's home, in the old college cemetery, in a quiet spot, so characteristic of the quiet, modest, unassuming gentleman that he was.

Supplied by J. E. Stokes, M. D., Salisbury, N. C.

DR. DANIEL MALLOY PRINCE.

Dr. M. D. Bitting.

The death of Dr. Daniel Malloy Prince at Laurinburg, Scotland County, North Carolina, on July 15, 1919, marked the end of a long and successful career of one of our Society's oldest members.

Dr. Prince was born July 4, 1848, at Ellersbie, Marlborough County, South Carolina. His father, a planter, was Lawrence Benton Prince, of Darlington, S. C., and his mother, Mary Rockdale McEachim.

Dr. Prince received his college training at the University of South Carolina, graduating from there in 1867. His medical course was completed in 1870 at the Medical College at Charleston, S. C. Later, he took advanced work at Johns Hopkins. In 1872, two years after receiving his M. D. degree, he received his license from the North Carolina State Board and began his practice at Wilson, N. C., in 1875.

On October 10, 1894, he was married to Irene Burwell Marshall. He was the father of eight children.

Immediately upon taking up his practice he joined (1875) our North Carolina Medical Association, which at that time had 148 members. After thirty years' membership he was made an honorary member of the Society. He held memberships in the Tri-State Medical Association and the South Carolina State Association and was an active member of his local Scotland County Association. During the war he joined the Volunteer Medical Service Corps, organized by the Council of National Defense. He was for many years surgeon for the Seaboard Air Line Railroad, and a prominent member of the Surgeons' Association.

The following tribute from one who knew him well tells of him as a man who loved to serve:

From The Laurinburg Exchange.

A Tribute of Love and Esteem From a Fellow-Practitioner and a Close Friend.

After a long illness, which he bore with courage and fortitude, my honored and much-loved friend, Dr. Daniel Malloy Prince, has gone to his long home, that bourne from which no traveler returns. His going couched many hearts with sorrow and has left a vacuum that time only can heal. Having suffered much, he was ready and willing to answer the final call. Life was sweet to him, and he wanted to live for the sake of his loved ones, yet "he knew in whom he trusted." He was ready to meet his Maker and was not afraid when the summons came.

Dr. Prince was a life-long friend of mine. I doubt if any man knew him better or more intimately than I did—nor did he have a friend that loved him more. Having known him so long, and being so closely associated with him, both as a friend and in a professional way, I felt that I "knew him well." As a type of manhood I don't know his superior. His honesty and manly virtues shown in his face like a beacon light. He believed in the Golden Rule, "Do unto others as you would that they should do unto you," and he lived up to its teachings in the fullest sense. He had a sacred conception of right and wrong, and if ever did one an injury

it was an error of the hand; it could not have been from the heart. He was far too noble and just to err knowingly.

I never knew a physician better loved or more trusted. He was a true friend to humanity in every station of life, and there are many that called him blessed. His very soul overflowed with generosity and kindness. He was trusting as a child, as gentle as a woman, as brave as a lion when occasion demanded such traits of character. He was a man that had few equals in the characteristics that go to make a noble and good man. He was an honor to the State of his nativity, an honor to his chosen profession, and a great honor to the State of his adoption. His virtues far outweighed his faults. Let us think of the good that was in him—that within itself is glory enough for any mortal. "His life was gentle, and the elements so mixed in him that Nature might stand up and say to all the world, "This was a man." Truly, a good and noble man has paid homage to the Conqueror Death. He passed to the great beyond feeling, "It is well—it is well with my soul." His friend, W. H. STEELE.

Aug. 4, 1919.

Information furnished by Mrs. D. M. Prince, Laurinburg, N. C.

DR. RICHARD HARRISON SPEIGHT.

(Read by Dr. E. G. Moore.)

Dr. Richard Harrison Speight, who for many years was prominent in Edgecombe County, died Thursday afternoon, September 4, 1919, at his country home, having succumbed to a stroke of paralysis, after which he was never able to practice his profession again. For nearly half a century he was a physician having a large and successful practice. He also had large family interests and left quite a valuable estate.

Dr. Speight attended the University of North Carolina 1867-1868, and graduated from the University of Maryland in the class of 1870. He was licensed by the Examining Board in 1875 and joined the North Carolina Medical Society in 1875.

In the death of Dr. Speight the entire State loses a most worthy citizen. He served the country as a member of the State senate in 1890, 1898 and 1901. He served as a director of the North Carolina Insane Asylum for six years. In 1890 he was chosen as a delegate to the National Democratic Convention.

The funeral services were held at the country home Friday afternoon in the presence of an immense crowd of friends and relatives. He was a Confederate Veteran, a number of the Veterans and Daughters of the Confederacy attending the services. He is survived by his wife and ten children.

Information furnished by Mrs. Margaret W. Speight.

RICHARD HARRISON SPEIGHT, M. D.

(By Dr. E. G. Moore.)

Richard Harrison Speight, the second son of Rev. John Francis Speight, of Greene County, and Emma Lewis Speight, of Edgecombe, was born January 5, 1847, and lived and died within half a mile of Mt. Prospect, the ancestral home of his mother, in Edgecombe County, September 4, 1919.

During the last part of the war between the States he served his country in one of the regiments of the seventeen-year-old boys. In 1867 he entered the University of North Carolina, finishing the sophomore year there in 1868, when the Institution was practically closed by a change in the political administration of the State. He decided to study medicine and matriculated the fall of that year in the University of Maryland, from which he was graduated M. D. in the spring of 1870. In the same year he opened an office at his home and practiced his profession there for forty-three years until physically incapacitated.

In September, 1912, he had a slight stroke of paralysis, which, however, did not incapacitate him. The following September he had a severe stroke, causing complete hemiplegia, from which he never recovered. On the 3rd of September, 1919, he had a third stroke, from which he died the following day, September 4, 1919. He was laid to rest in the cemetery attached to Speight's Chapel of the Methodist Protestant Church, located on his home place, of which he was a member. His funeral was largely attended, among those present being a number of Confederate Veterans in uniform.

Dr. Speight was twice married, first to Margaret Anne Powell, a near neighbor, in 1871, and second to Margaret Whitfield, of Wilson, in 1896, both of them admirable women of the best in character and lineage of the people of that section of our State. By his first marriage he had twelve children, ten of whom, three daughters and seven sons, together with his widow, survive him. Of the sons, three are physicians of excellent reputation as men and practitioners.

As a citizen he was public-spirited and progressive and the people of his county showed their appreciation by electing him State senator three times, 1891, 1899 and 1901, in which bodies he was quite influential. For several years, he was a member of the Board of Directors and of the Executive Committee of the State Hospital at Raleigh, and later a member of the Board of Directors of the State's Prison.

By inheritance and subsequent accumulations, he acquired a large quantity of land and was a farmer on an extensive scale, as well as a physician and public servant.

But it is as a physician that Dr. Speight chiefly deserves our consideration. He was a typical country doctor of the best class, and, in the writer's opinion, a physician could not receive higher praise. In response to an urgent call in the middle of a winter's night from some poor patient who he knows can pay him nothing, he leaves his warm bed, drives for miles, part of the way along some narrow stumpy woodland path through the stygian darkness of a northeast rain storm to the humble cabin in the wilderness to be confronted on arrival by a case of such gravity and urgency as to test the ingenuity and skill of the best surgeons with every aid—and he with no help has to bear the responsibility and do the work under the most unfavorable circumstances—alone. This is an extreme illustration, but there have been many such in our medical history, and there have been and are in our State peers of the Scotch Highland country doctor, William McClure, immortalized in "Beside the Brier Bush." When we consider the courage, resourcefulness and the generous sacrifice of self to duty and humanity of the conscientious country doctor, we can understand why it

is that the true heroes of medicine are mostly to be found among them and why it is that we are justified in referring to our calling as "the noble profession."

Endowed with a vigorous, acute logical mind of which a characteristic was the highest of mental gifts—common sense—a keen observer, a man of independence of thought and the courage of his convictions and kindly feelings, it is easy to understand that he was a very successful practitioner and why he was trusted and beloved by his large clientele to an unusual degree.

Dr. Speight was a man of ability and character, a patriotic and useful citizen, a devoted husband and father, a warm and loyal friend.

He rests from his labors and his works do follow him.

DR. MARK PETTWAY PERRY.

Dr. Perry died at a Wilson hospital Friday, October 17, 1919, after a short illness. He was buried at Macon, his home, Sunday, the 19th.

Dr. Perry was born March 1, 1858, in Halifax County, North Carolina. His father, Elijah B. Perry, was a farmer from Franklin County, North Carolina, and his mother was Sallie Burgess.

As a boy he attended the Graham High School in Warren County. His medical training he later obtained at the College of Physicians and Surgeons, Baltimore, Md. After his graduation, he began his practice at Macon, N. C. He was granted license by the State Board in 1884, and joined the State Medical Society the same year, serving as treasurer of the Society for six years. He was a member of the Warren County Medical Society, and also a member of the Seaboard Air Line Surgeons' Association. He served two years as Superintendent of Health of Warren County, and was a member of the County Board of Health for years.

In the presence of a gathering estimated at a thousand people, friends and loved ones made during thirty-five years devoted to the practice of medicine and by a life graced with many acts of kindness to those with whom he came in contact, the remains of Dr. Mark Pettway Perry were tenderly laid to rest in the Macon Cemetery, Sunday afternoon, at 4 o'clock. The reverential atmosphere and the sorrow upon a thousand hearts told of the loss of a friend and by the token of their presence paid silent tribute to his memory.

He leaves two brothers, Messrs. Elijah and Ed Perry, of Littleton, and two sisters, Miss Sallie Perry, of Richmond, and Mrs. Harper, of Georgia, to mourn their loss. This sorrow burdens the heart of his wife and the following surviving children: Mrs. Stewart Morrison, of Wilson; Mrs. Willis Blacknall, of Henderson; Mrs. Alex Kelly, of Camp Humphries, Washington, D. C.; Misses Florence and Pattie Perry and Mr. Mark Perry, of Macon.

Completing his medical course, Dr. Perry united in marriage in April of 1884 to Miss Florence Brame, daughter of Mr. J. M. Brame, of Six Pound. He located in Macon, where for thirty-five years he untiringly and relentlessly devoted an active life to the arduous duties of his profession. He was always aligned with the movements which tended to the higher things of life.

Dr. Perry belonged to the old school of medical men whose sacrifices were unlimited. He practiced before the advent of the automobile. For many years he was forced to arise in the midst of the night and in the cold and dark to hitch a horse to the buggy and go forth to relieve suffering. Fees were small, people were poor, roads were bad, trained nurses were not procurable, and the duties of the profession devolved upon the shoulders of the family physician. Well were they discharged during the practice of thirty odd years among the people of Warren. Sacrificing was the spirit of these men of the old school whose experience made them good doctors, and whose kindness, patience and ministration made everlasting friends.

Information supplied by Dr. L. J. Picot of Littleton, Mrs. M. P. Perry of Henderson, and Dr. Charles H. Peete, Warrenton, N. C.

A Tribute to DR. PERRY by Dr. Chas. H. Peete, Warrenton, N. C.

Many a young man begins the practice of medicine imbued with the highest spirit of altruism, but as the years pass and the press of life becomes harder, that altruistic impulse oftentimes finds itself getting sadly warped, and our young physician begins to take on a mercenary attitude, particularly when home and family cares have come to him. Not that the young doctor doesn't attend with care his practice, but he hurries from one patient to another, and does not spend the same amount of time or pains with each case that he formerly did; and he finds that the strain of intensive responsibility is making him tired, and the loss of sleep makes him sluggish,—and he slows up with himself and his practice. And this strain is the country doctor's heritage. But the man who keeps on with his painstaking work, answers all his calls, whether rich or poor, going day or night, whether he gets any remuneration or not, from one to another,—what comes to him? He goes out, rain or shine, into the dark, black night, rain coming down in sheets, or into the stars or warm moon of a perfect summer night with its sweet balmy air, or equally into the frigid gust of Polar wind,—all to aid poor, frail and suffering humanity. His financial rewards are often few and delayed. Seeing him willing and eager to visit all the sick, every bum and poor-pay sends for him, exulting in the fact that here at least is the man they can "work"; and they take more of his overfilled hours than the needy case who has money for the doctor. But as the years go by, what do they bring him? Little by little it dawns on the individual or family that have found a friend, a friend that will listen to their woes and sorrows and lend a hand or soothe the troubled brow, whatever be the cause; a friend that will enjoy unselfishly all the joys they bring to him; a friend that when grim death peers through the curtained window will stay unsleepingly by the bed-side and whisper cheering comfort and hope to the sufferer; and a friend into whose arms the anguished mother or father falls when the dread reaper gathers to his cold embrace the loved one. The doctor of this type does not always have all these feelings poured into his ear, for what the public often deepest feels it keeps deepest in its heart. But when his affliction comes, then see what happens.

Some years ago Dr. Perry, whose life fits the above description of the unselfish doctor, lost in the blush of young manhood his eldest son. At his

funeral every person, without regard to age or sex, throughout his community was present. And it was not an idle or curious minded gathering; the silent hush and the flowing tears showed its earnest and deep feeling.

Last fall Dr. Perry, as the result of these years of unselfish devotion, was brought back to his little country church to be buried. That church was filled, with no room left for standing. Mothers were there with the children the doctor had brought into the world, or rescued from the hand of death by long hours of struggle; bereaved ones were there whose sorrow the doctor had alleviated by untiring devotion to the departed one; certain ones whose secret sorrows the doctor shared and softened, crowded in with overfilled eyes. Every doctor of the county and the nearby communities was there in a body. Flowers were there from the expensive florists, and from the scanty flower garden of the poor farm hand. There was a hush in that church that was not broken save by shaking sobs; and every eye was bright with glistening tears or blinded by their fall. The choir, all friends of his, sang through tears, and the old hymns sounded shaken with emotion. And at the grave every one present assented as an old black mammy sobbed forth: "*My* old doctor. He done gone; de good Lord took him."

DR. H. G. LUCAS.

Dr. H. G. Lucas, an old resident of the State, died at White Oaks, Bladen County, November 27, 1919.

Dr. Lucas graduated in 1870 from the Philadelphia Medical College. He became a member of the State Medical Association in 1875, and began his practice in Bladen about that time. He was a member of his County Medical Association, as well as the State Association.

The doctor was married, and had five children. He was interested in all educational matters and served as chairman of the board of education of Bladen County. During the war he also served on the County Exemption Board.

Information furnished by Dr. E. S. Clark, Clarkton, N. C.

DR. JOHN GRAY BLOUNT.
(Read by J. M. Manning)

Dr. John Gray Blount, second son of Dr. William Augustus Blount and Katharine Masters Blount, was born in Washington, D. C., December 31, 1869. He received his preparatory education at Trinity High School, and upon completion of his four years' work there entered the University of North Carolina.

After spending two years at the University in academic work and one year under private preceptorship in the study of medicine, he entered and completed three sessions in the Bellevue Hospital Medical College of New York, graduating in 1892.

He then took a course in post-graduate work in the Johns Hopkins Hospital of Baltimore, Md.

Always a thorough student, he took a high stand at each of these institutions, and his studious habits remained with him throughout his useful life with resultant benefit to himself and to those to whom he ministered.

He received his license and joined the North Carolina Medical Society immediately after graduation and remained an active member until his death on December 8, 1919.

Dr. Blount was a fine type of the successful physician and lived up to the highest ideals of his profession and his high character and eminent skill merited and won recognition where he was best known.

For more than twenty years he commanded a practice second to none in eastern North Carolina; for twelve years he held the responsible office of Superintendent of Health in his native county of Beaufort, and during all the years since he reached manhood he identified himself with every movement having as its object the uplift of his profession and the progress of his town, county and State.

Dr. Blount was a member of the Exemption Board of Beaufort County, served as President of the Beaufort County Medical Society, was a member of the Seaboard Medical Association, the Tri-State Medical Society and the American Medical Association. For two years he served on the North Carolina Board of Medical Examiners for Nurses.

In 1918 he was elected a delegate to the American Medical Association, which met in Chicago.

For the last three years of his life he was examiner of Practice of Medicine on the Board of Medical Examiners of North Carolina, and in 1918 was made President of the Board.

In recognition of his interest in and loyalty to his Alma Mater, he was elected a Trustee of the University of North Carolina.

He was a member of the Masonic Order, the Society of the Cincinnati, the Sons of the American Revolution and of the Delta Kappa Epsilon Fraternity.

Dr. Blount was a member of St. Peter's Episcopal Church of Washington, and was closely identified with this church, as were all his people for generations.

Possessed of fine business ability and the trust and confidence of his people, he was a member of the Board of Directors and Vice-President of the Bank of Washington, and was identified in a responsible way with many other large interests.

On May 26, 1897, Dr. Blount married Dena Watters Angel of Wilmington, N. C., a splendid woman and fit helpmeet and companion. Of this union there are three children: William Augustus, Samuel Masters and Leonora Watters.

The privilege of knowing and associating with Dr. Blount was a great one. He was loyal to his friends, sincere and honest, and in the passing of this warm and generous heart, the medical profession of North Carolina has lost one of its strongest and best members.

"Covered with a mantle of velvet turf, lulled by the soft wind through the rustling trees, in the evening shadows as the sun sinks into the golden west, he sleeps, awaiting the resurrection morn, when he shall hear from the Great Physician the blessed words, "Well done, thou good and faithful servant; enter thou into the joy of thy Lord."

H. W. CARTER.

DR. JOHN GRAY BLOUNT.

The BOARD OF MEDICAL EXAMINERS of 1914-1920 wishes to make permanent record in the Transactions of the Medical Society of The State of North Carolina of its appreciation of the life and services of its late member,

DR. JOHN GRAY BLOUNT.

Born in a family of high social standing and culture, with the best early advantages of education and training in the schools and the University, he brought to the study of medicine a mind well trained to study, for accurate observation and logical deduction.

Having chosen his profession in boyhood, he had absorbed as a result of close association with his father much of the principles of medicine which others less fortunately situated must learn by close application.

His medical course was marked by his close study of all the branches and he was at his graduation well prepared for his State examination and license.

He immediately began general practice in association with his father, and with a rare filial devotion gradually assumed the cares as they grew more burdensome, and at considerable personal sacrifice gave to the father a measure of rest which a long professional life had fairly earned.

A successful practitioner from the beginning, he grew to eminence in his profession, and while he was qualified for special work he chose rather the broader field, the greatest of all specialists, that of the family physician and general practitioner, earning the gratitude and lasting devotion of his patients and his own community.

Dr. Blount was equally successful in a business way; his good judgment brought good returns from investments which he made.

It is peculiarly of his relations in association with our Board as an Examiner in the Practice of Medicine that we wish to speak. He was most careful in the preparation of his papers, that they should make a fair test of the knowledge of the candidates for license, that each one should have full credit for what he knew, that the public should be protected from an ignoramus, and in his marking he was charitable, but firm, insisting that those should be passed who were entitled to do so, but that the incompetent should be rejected.

As his life had been so was his end, doing faithfully day by day what his profession demanded, and doing his full duty in that state of life unto which it pleased God to call him.

Dr. Rodman:

I could not let this chance go by without saying a few words, having been associated with Dr. Blount and raised in the same town with him; also going to the University of North Carolina and to Medical College with him. He was a man fair and square. He was a man of gentle qualities. He came from a religious family, and he has followed faithfully in their footsteps. In this loss his friends, his patrons and the profession of our county have lost a great man. He has also been a distinct loss to the profession of North Carolina and to the Society of the State of which he was an honored member.

DR. IVEY G. RIDDICK.

(Read by T. M. Jordan.)

Dr. Riddick died at his home in Raleigh, January 1st, 1920. He was the son of Wiley Riddick, his mother being Miss Annie Jones. His father was a farmer; therefore, Dr. Riddick was reared on the farm. He married Miss Annie Dunn, and of that union there were three children. Dr. Riddick was a brother of President W. C. Riddick of the North Carolina State College of A. & E. He attended school at Wake Forest College and graduated in the class of 1884. He took his medical course at Bellevue Hospital, New York, and graduated in 1886, obtaining license from the State Examining Board in the same year.

After graduating, Dr. Riddick located for the practice of his profession at Wake Forest, remaining here only two years, then going to the near-by town of Youngsville, Franklin County, where he had a large practice for over twenty years. In 1899 he represented his county in the State Legislature. He gave up his practice at Youngsville to accept a position at the State Penitentiary under Governor Kitchen's administration. This necessitated his moving to Raleigh, where he continued the practice of his profession until called to join his daughter, Miss Eliza Riddick, who nursed influenza patients in 1918, contracting the disease herself, from which she died.

Information supplied by Dr. W. C. Horton, of Raleigh, N. C.

DR. E. REID RUSSELL

(Read by Dr. Webb Griffith.)

We have met today to meditate and reflect on the life and influence of one of our own who has finished his work.

It is eminently fitting that we should do this and to collectively reflect upon the good and noble and the true that we see exemplified in our fellow-man.

It is eminently fitting that when one of our number enters through the portal of that mysterious change we call death, that we should gather together and pledge ourselves to imitate and emulate all that we find of good and noble and true in his life and character.

In dedicating a battlefield of one of the decisive battles of the world to the memory and honor of the soldiers who had fallen there, a man who who spoke from his heart said "the world will little note, nor long remember what we say here today, but the world will never forget what they did here."

We, the friends and companions of Dr. E. Reid Russell, will little note nor long remember what is said here today; but the love and affection for his character and work and service, especially to little children, will remain enshrined in our hearts so long as our memory lasts.

When a friend slips away in the prime of his life and work and manhood, we seem to feel at first that the vacant place cannot be filled. But I believe the death of one under those circumstances stimulates the laudable ambition in others to fit themselves to carry on and fill up the gap.

To many of the friends and patients of Dr. Russell it may at first seem that there is no one to fill his place, but his work and service will stimulate others to greater efforts, and thus his influence for good to mankind will live on and on.

Dr. Russell was one of us. None of his true friends would wish me to say that he was especially pre-eminent among his fellow-men. He was one of the many noblemen whose great work in life was in giving the best that was in him for the help and the betterment and happiness of mankind. These attributes are a spark of the Deity that have ennobled men since the birth of the human race and will continue to ennoble mankind

"So long as the river flows,
So long as the heart has passions,
So long as life has woes."

DR. JOHN HEY WILLIAMS.

(Read by Dr. J. B. Witherspoon.)

WHEREAS, our beloved brother, John Hey Williams, has been called from us to our Heavenly Father; and,

WHEREAS, our brother had served long and faithfully among us, and we delight to do him honor; and,

WHEREAS, we wish that his memory may be preserved as an example to those who come after us; therefore, be it

RESOLVED, That the record of Doctor Williams' life be spread upon our minutes as follows:

He was born in Kentucky, September 27, 1842.
He died in Asheville, November 14, 1919.

For more than a generation he went about doing good in our midst, and, emulating the example of Luke, the beloved physician, who strove by day and by night to relieve pain and distress among his fellow-men.

RESOLVED, further, That we record our brother's service as a member of the several Masonic bodies, as follows:

Initiated in Mt. Hermon Lodge, January 20, 1893.
Passed to the degree of Fellow Craft, February 24, 1893.
Raised to the sublime degree of Master Mason, March 17, 1893.
Member Cyrene Commandery, Knights Templar.
Member of all Asheville bodies Ancient and Accepted Scottish Rite.
Member Oasis Temple of the Mystic Shrine.

In his service as a Mason, Brother Williams again displayed the sincerity of his devotion to the service of his fellow-man.

RESOLVED, finally, That in his work as a faithful physician, as a leader in his church, as a builder among Masons, and, above all and thru

JOHN HEY WILLIAMS

all as a man among his fellow-men, our brother was an inspiration to all who believe that the service of mankind is the service of God.

"Inasmuch as ye have done it unto one of the least of these my brethren ye have done it unto me."

CURTIS BYNUM.
T. J. HARKINS.
C. P. AMBLER.

RESOLUTIONS ON THE DEATH of BROTHER JOHN HEY WILLIAMS.

WHEREAS, it has pleased our Heavenly Father to remove from our midst our respected brother, John Hey Williams; therefore, be it

RESOLVED, That we humbly bow to the dispensation of Him who doeth all things well.

That we hereby express our appreciation of the long and useful life led by our brother and the many acts of kindness and charity performed by him.

That we tender our sympathy to the bereaved family.

That our charter be draped for thirty days.

That a copy of these resolutions be incorporated in our minutes, a copy sent to the family, and a copy to the Orphans' Friend for publication.

ANNA M. POWELL
JUNIA STREET.
IDA NEVERCEL.

MRS. MARIE C. BEAN,
Sec'y Esther Chapter No. 13, Order of the Eastern Star.

IN MEMORY DR. EDWARD C. REGISTER.

(By Dr. Thos. E. Anderson, for the State Board of Health.)

Mr. President and Gentlemen of the North Carolina Medical Society:

Coming, as I do today, to pay a tribute to our departed friend and brother, Dr. Register, I feel deeply that mine is not the pen to render this service, for I was too close to him, and we are standing today just on the threshold of his death, and words seem almost a violation of the sanctity of the grave; we feign would sit with bowed head and allow death to be its own silent orator.

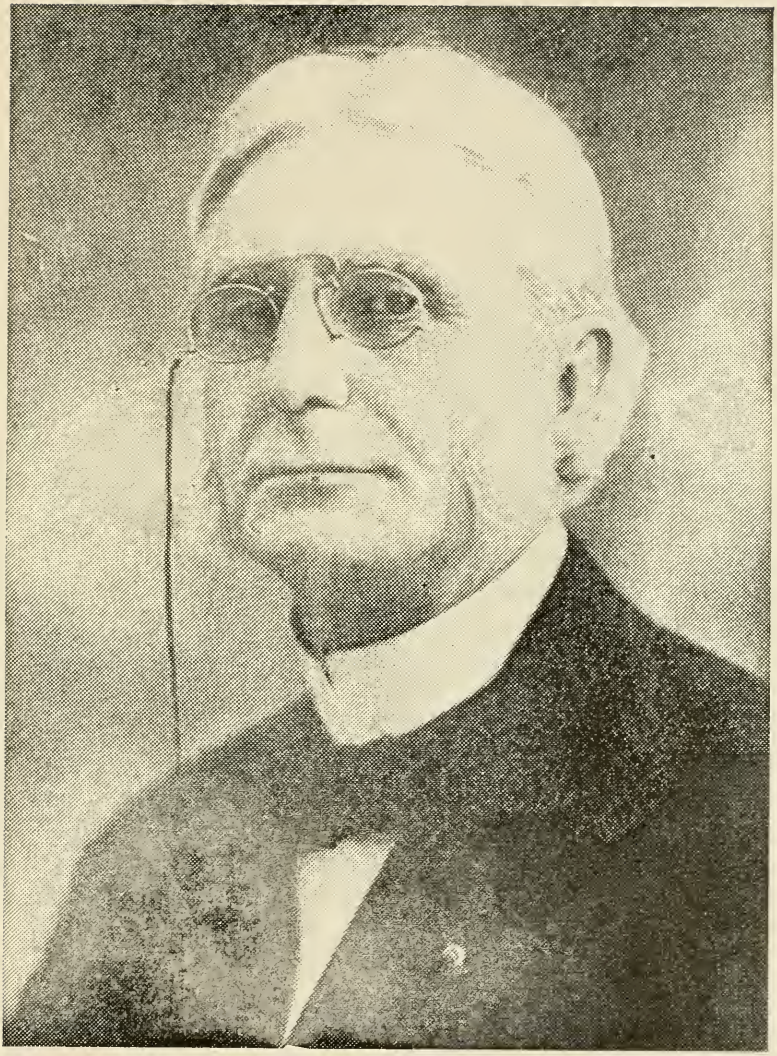
Dr. Edward Chauncey Register died at the Charlotte Sanatorium in Charlotte, N. C., at 3:30 o'clock, on the morning of February 18, 1920, after an illness of one week of pneumonia, following a mild attack of influenza, exhibiting the presence of nephritis, which had existed for a couple of weeks. As stated, he died in Charlotte, N. C., the city in which he had cast his fortunes in December, 1887, and which had been the arena of his life work extending through thirty-three years. It was fitting that his tired body found a resting place in the cemetery hard by, for to him Charlotte and its environs was almost holy ground and to his friends he seemed a part of it. And today Charlotte is a changed Charlotte without his presence.

The annals of his life include the following: Edward Chauncey Register was born in Rose Hill, Duplin County, North Carolina, October 20, 1860, making him at the time of his death 59 years and 4 months of age. He was the son of Dixon S. and Mary Wilkins Register. He was educated at the University of North Carolina, and obtained his medical education at the University College of New York, receiving his degree in 1880. Some years later he took post-graduate studies at hospitals and clinics in Europe, having visited Europe four times, in addition to making a trip around the world, including Japan and India. On January 5, 1887, he married Miss Lavinia Cotrell Montgomery, of Concord, N. C., daughter of the late Judge Montgomery of that town.

He came to Charlotte the same year, prior to which time he had practiced medicine in Enochville, Rowan County, North Carolina. Charlotte at this time was just a robust hustling town, just assuming city airs and giving promise of greater things, made up of a homogeneous citizenship largely native-born, with a medical faculty then as now which was both the pride of the city and the State and deeply entrenched in the hearts of the people. Here, the scholarly Dr. Johnston B. Jones had wrought and left his impress on the city. Coming here from Chapel Hill, a ripe scholar and learned physician, much sought after far and near, associated with him and imbibing from him was that knightly physician and most loved citizen, Dr. Joseph Graham, to mention whom brings before us his handsome face and figure, a chivalric leader in war and a wise counselor in medicine, he was the idol of his town. Here was also at this time the affable and magnetic Dr. J. R. Brevard, whom to know was a piece of good fortune. The elder Dr. Robt. Gibbon was here—the acknowledged foremost surgeon of his State in his day, who will always be held in grateful memory for the legacy he left his State and country in the persons of his two gifted sons, Drs. John H. and Robert L. Gibbon. Dr. William A. Graham, a true son of his father, was just coming on the stage. Several others whose names I cannot recall belonged to this day.

Coming, as Dr. Register did, into this arena and somewhat close corporation, a young and untried physician, he was viewed with critical eye, and this felt surveillance served as a stimulus to bring out the best that was in him. How well he met the issue and performed his part is now a record much treasured by his friends. His achievements and energies carried his name beyond the confines of his city and he received honors and acknowledgements only accorded the few.

The record shows that he was a member of the Board of Medical Examiners for the State of North Carolina from 1898 to 1902, and President of the Board. In 1906, he was President of the North Carolina Medical Society, which held its meeting in Charlotte that year. In 1907 he was appointed a member of the North Carolina State Board of Health by Gov. R. B. Glenn, which position he held until 1913. In 1917 he was again appointed a member of the Board by Governor Bickett, his entire tenure running until 1923, and hence he was a member of the North Carolina State Board of Health at the time of his death. In 1916 his fellow-members of the American Medical Editors' Association elected him as their President, which held its meeting under his presidency in New York City. His Presidential address on this occasion received much attention from



EDWARD CHAUNCEY REGISTER, M. D., 1859-1920.

Ex-President North Carolina State Medical Society, Ex-President North Carolina State Board Medical Examiners, Ex-President Tri-State (North Carolina, South Carolina and Virginia) Medical Association, Ex-President American Medical Editors' Association, Member North Carolina State Board of Health, Member American Medical Association, Member Board Trustees Trinity College, Etc., Etc.

the medical press of the country, and was of a very high order. In 1915, he was President of the Tri-State Medical Association, meeting that year in Charleston, S. C.

Perhaps destined to be the most enduring monument he left behind was in the establishment of the Charlotte Medical Journal in 1891. It is now firmly established in the medical world of our land and of other lands. This was only accomplished through long days of toil and nights devoid of ease. The early struggles he made to get a foothold and recognition in his own State and in surrounding States, the opposition he met and surmounted, would, if fully known, almost enroll his name among the martyrs. In spite of detraction and every known expedient to hamper his efforts, with a determination and nerve, which alone lifts him far beyond the common run, he kept his hand upon the throttle and his eye upon the goal and lived to enjoy the complete realization of his most sanguine hopes. Not a prolific writer, yet when he addressed himself to a subject his writings were characterized by great care and thought. Perhaps no more thorough or comprehensive paper has ever been presented to the North Carolina Medical Society than his paper dealing with the Management of Typhoid Fever, read at our Greensboro meeting in 1905.

Perhaps his place on the Board of Trustees of Trinity College was to him a matter of more pride than any other honor which had come to him. Of a studious temperament and retentive memory, he had become a most resourceful doctor before his Journal made such inroads on his time.

In appearance he was striking, his thoughtful face surmounted by a head whose wealth of gray hair attracted ready attention in all assemblages. His honors and labors were many, but, unlike Mark Antony at Cæsar's bier, "I come neither to bury or to praise him," and in the further prosecution of this paper I shall yield myself to the lure of the man as he appealed to me. A friend of his, an editor, has most fittingly alluded to him as "Comrade Register." That word to his intimates is as "apples of gold in pictures of silver," for Comrade he was to those who shared his confidence. An interesting talker, a good listener, where could you find a more delightful traveling companion? Were you his friend? Did ever anyone greet you with a more cordial hand grasp or gleam of welcome from kindling eyes? In the all too few visits to his office in my hurried trips to his town, under the spell of his welcome, I have narrowly escaped missing my train more than once. To some he might have seemed unresponsive, but I have never known a man who put a higher value on friendship. At the close of a life full of endeavor just rounding out three score years, he fell asleep, on the watches of the night, surrounded by his medical brethren, who had rendered him most loving and unstinted service, and exhausted every measure to stay the fatal malady.

EDWARD CHAUNCEY REGISTER.

(By Dr. John E. S. Davidson.)

Few of us have not felt an absence in the social fellowship and in the councils of this Society. Edward C. Register, for many years a conspicuous figure among us, has fallen upon sleep. It is but fitting that this Society, of which he was so distinguished a member and for which he labored

with such effective strength, should write into its permanent records an appreciation of this unusual man.

Edward Chauncey Register was born in Duplin County, North Carolina, October 20, 1860, the son of Dixon S. and Elizabeth Wilkins Register. His literary education was in the schools of his native county and in the University of North Carolina. He secured his medical training in the University of New York, taking his degree in 1885. After two years of practice in Enochsville, he located for the practice of medicine in Charlotte, N. C., in 1887, bringing with him his bride, Lavinia Montgomery, who was to have so great a part in the successes of the after years. In the same year he joined the State Medical Society, and for thirty-three years he was one of the most untiring workers in the field of his chosen profession and in the various Medical Societies founded for the advancement of medical efficiency and learning. So well has he become known that it is surely unnecessary to tell to the doctors of North Carolina or of the South, the high honors to which he won; but for those of other generations who will follow us, it should be recorded that his indefatigable labors, professional efficiency and wisdom in constructive counsel brought to him the rewards of conspicuous station. He was at some time during these later years, President of the North Carolina State Board of Medical Examiners, member of North Carolina State Board of Health, President of the North Carolina State Medical Society, President of the Tri-State Medical Association, and President of the American Medical Editors' Association. Perhaps no man in this section of the nation ever attained to greater eminence or wider recognition in his chosen field of work than did this Duplin County boy. So unusual was his success that it is fitting to record an estimate, by those who knew him best, of the qualities that marked him for such large leadership.

Dr. Register had in his heart an aspiration for success, the quality which men call ambition, to a degree that was the astonishment of those who were privileged to dwell in intimacy in his inner heart. This high and commendable desire to attain and to be a part of the largest service in his chosen field focussed all his strength upon his unwavering purposes. He sought by every means to fit himself for his beloved work. His private library, probably the largest of its kind in this section of the nation, is a mute witness to his effort to be a master healer of the diseases of man. He traveled much and far, studying the life and medical methods of all the leading peoples of the world. He sought in his associations and fellowships men of culture and attainment that he might be sharer in their knowledge and strength.

As a logical companion quality to his aspiration was his power to work. Men who knew him even casually knew that he was always an intensely busy man. But only those who were admitted to intimate relations knew how intense was the absorbing concentration of his strength on the unending tasks. He denied himself many of the pleasures of life, its social diversions and its rest of play. To a late hour of night, when other men had sought rest in sleep and the streets of his city were becoming deserted by all but the midnight shadows, one might see the light in his window office shining still, and know that he was still bending in faithful per-

formance of the hard labors to which he had devoted his years and all his strength.

It remains to speak of his power of will. In this quality it will be readily admitted that he was pre-eminent. He moved to his objective with a strength and driving power that knew neither fear nor compromise. So accentuated was this characteristic in him that he seemed at times a hard and almost heartless man. But in the calm contemplation of a life that has come to its earthly end one can dimly discern in such a quality one of the elements of genuine greatness and can understand in the light of after-knowledge that such strength, hard and unswerving as it seems, was and always must be an essential part of the stern equipment of a leader.

It is natural, even inevitable, that a man of such intense concentration had not the time for large circle of intimates. But it is also natural that such a man had always about him a small company of greatly devoted friends. And to them it is known that he had the power of unselfish love and of fidelity to friendship which bound them to him with unbreakable bands.

Such were the qualities of this man. His achievements are known. He was an eminent physician; he was a constructive builder in medical organization; he was a marked leader in the development of the efficiency and increasing effectiveness of Medical Science; he was an untiring advocate of everlifting professional standards. If the work of the North Carolina State Medical Society shall be of permanent worth, if mankind shall be given an ever increasing efficiency of medical service through its processes and endeavors, if health shall more easily triumph over disease and by its strenuous labors life shall become more truly lord of death, then among the names of those who have borne honorable part in the high achievement will be ever that of Edward Chauncey Register.

EDWARD CHAUNCEY REGISTER.

(By J. Howell Way.)

At his home in Charlotte, N. C., in the early dawn of February 18, 1920, in the sixty-first year of life, there passed from this earth to immortality the spirit of him who in the flesh was known to us all as Dr. Edward Chauncey Register, eminent physician, distinguished medical editor, able and successful organizer of the many phases of modern medical activity, as societies, hospitals, etc., sanitarian publicist, upright and respected citizen, and loyal friend. He was born on a farm in Duplin County, North Carolina, in 1859, of sturdy North Carolina folk, descended from English ancestry implanted in this soil a few generations back.

The early life of Dr. Register was similar to that of the average lad, coming into the world in those troublous times, and growing up in the days of scarcity in the South following the Civil War. His early educational opportunities were meagre, and he was well in his 'teens before he began to realize the possibility of attaining his boyhood ambitions, to have books, acquire an education, and become a man whom the world about him would respect and honor. In his twenty-second year he entered the University of North Carolina, where he spent two years, and was in later years

written of by Dr. Kemp P. Battle, the President, as a "faithful and excellent student."

Leaving the University, he went to New York City, where he engaged in the study of medicine in the University of New York, from which he was graduated with the degree of M. D. in 1885. While a student here he attracted the favorable attention of the late and distinguished Dr. William M. Polk, who predicted for him a career of success, and advised him to stay in New York City; but the lure of his home State, coupled with the immediate necessity of earning his living, influenced his return to North Carolina, where after procuring license from the State Board of Medical Examiners in 1885, he began the practice of medicine in Enochsville, Rowan County. Success early came to him, and quickly he became known as one of the most capable and active young physicians in that section. Within a year he realized the professional limitations of his environment; and while I more than once remember hearing him refer to those halcyon days, when he realized he was going to win in life, his restless spirit yearned for larger fields of activity, and a little later he removed to Charlotte, opening almost simultaneously an office for the general practice of medicine, and founding with his brother-in-law, Dr. John C. Montgomery, The Charlotte Medical Journal in 1887.

It was the privilege of the writer to become a member of the North Carolina State Medical Society at its annual session in Charlotte in 1887, and he carried home with him the impression that Dr. Register was one of the ablest men he met. Charlotte was then, as perhaps now, the leading medical center of the State, with an educated and cultured medical profession, whose fine traditions and practices were held high by such as the elder Grahams, Gibbons, and others of like professional eminence. Among these choice spirits he was accepted as a Doctor of Medicine and a man of superior type, and it may be truly said that the history of local medicine in Charlotte as well as medicine in the State was from then on for thirty years closely interwoven with his own. Caring for the onerous responsibilities of active practice and consultations with numerous colleagues in his home and the adjacent counties, he successfully conducted the Medical Journal he had founded in 1887 to the day of his death.

Besides the enormous amount of editorial writing, a careful study of the current professional literature emitted from North Carolina to Australia and India, he yet found time to prepare and publish an attractive eight volume on "Fever Nursing." This book, published by the leading medical book firm of Philadelphia in 1906, was immediately adopted as a text book on that subject by many leading colleges in America and elsewhere, a European edition being printed shortly after the American. Imbued with a passion for books, he accumulated one of the largest private libraries in the South, in which he took much pride.

Choice honors of his profession were freely accorded him. He served a term of six years as a member of the North Carolina State Board of Medical Examiners, being elected President of the Board by his confreres. He was a Councillor of the State Medical Society, and later President of the Society in 1906. His President's address on "Medical Education" elicited widespread and favorable comment. Governor R. B. Glenn ap-

pointed him a member of the State Board of Health in 1905 for a term of six years; a well merited compliment conferred again in 1917 by Governor Bickett: In addition to his membership in the State and County Society, he was a member of the Tri-State Medical Association, the American Medical Association, and of the American Medical Editors' Association; being President of the latter at the annual session in New York City in 1915. He was President of the Tri-State Medical Association at the Charleston, S. C., session in 1915, where his President's address was a most masterful plea for an independent medical press, and which address enjoyed the compliment of the immediate publication in the Journal of the American Medical Association, whose editor was pronouncedly antipidel to the views and policies therein enunciated.

Dr. Register held for some years the Professorship of the Practice of Medicine in the North Carolina Medical College at Charlotte until the College was discontinued in 1913.

Dr. Register was a man of striking personality, of tall, rather slender form, and surmounted by a massive head, covered with an unusually heavy suite of silver-gray hair, with a high, wide forehead; keen, penetrating, blue eyes; thin, clear-cut lips; a form and a face which would anywhere both attract attention and command respect.

He was happily wedded January 5, 1887, to Miss Lavina E. Montgomery, daughter of the distinguished North Carolina jurist, Judge William J. Montgomery, of Concord, N. C.

En passant, I may be permitted to observe that this most excellent lady proved in the fullest sense of the term indeed a help-mate to him in almost every phase of his busy and active life, and survives him to continue the kind friend and cheery companion of those in her environs in need of sympathy and friendship.

Dr. Register has passed too recently, and the writer was perhaps too close to him in friendships tie to pass a true estimate of him as a man. Suffice it to say he was of pronounced convictions, positive in his views of most things concerning and affecting him or his interests, persistent and determined to a degree that ofttimes evoked the admiration of his friends and equally frequently challenged the criticism of opponents. His was a loyal friendship, and his antagonism worthy of a foeman's best steel.

Patients of many years and needs clung to him after his health failed, and his possible activity two years prior to his death lessened his capacity to serve them, believing him the most capable doctor, and the best friend they had on earth.

Dr. Register was a Southern Democrat in politics, a thirty-second degree Mason and a Shriner. He was for many years a member of Tryon Street Methodist Church, Charlotte, N. C.; and no doubt every pastor of that church during his membership could give cheerful assent to the statement that he did not let his right hand know the frequent courtesies of his left.

One of the chief honors and most highly appreciated by him of his many, was his membership on the Board of Trustees of Trinity College. He always attended the Board meetings and manifested a lively interest in its various functions.

From these annual memorial exercises, which I trust never to see this Board of Trustees too busy or too pre-occupied to conduct, the living should learn anew the lesson that is as old as sacred history. The lesson is this: "It is better to go to the house of mourning than to the house of feasting, for that is the end of all men; and the living will lay it to his heart." A sanctuary of sorrow is a crucible in which to purify the soul. May our contemplation of the life and character of our dead friend and brother be to us a constant reminder of the serious meaning of that irrevocable decree: "Man is born to die." Though ofttimes industriously struggling for fortune and as sedulously striving for fame, endeavoring to "lay up for ourselves" diversified treasures on earth," let us remember that death comes nearer to every one of us with each fleeting breath; that it comes indifferently, "as a thief in the dead of night or as a royal guest at the blaze of noon." Let us bear this well in mind, not that our days may be consumed with impotent grief, or our lives crowded with dispiriting gloom, but rather that we may be impelled to make timely preparation for the coming of the inevitable hour in which every man must surrender his own soul.

"And when the Angel of Shadow
Rests his feet on wave and shore,
And our eyes grow dim with watching,
And our hearts faint at the oar,

"Happy is he who heareth
The signal of his release,
In the bells of the Holy City,
The chimes of eternal peace."

With the abiding faith of earnest men that everything in the universe was designed by the Supreme Architect for some purpose of ultimate good, with the persisting faith of Christian believers, that all who earnestly strive shall eventually wear perfection's crown, let us go forth, with hope in our hearts and courage in our breasts, to fight the good fight, to finish our course, and unqualifiedly keep the faith.

"And when earth's last picture is painted
And the tubes are twisted and dried;
And the older colors have faded,
And the youngest critics have died,
We shall rest, and faith we shall need it.
Lie down for an eon or two,
'Til the Master of all good painters
Shall set us to work anew.
And those who were good shall be happy.
They shall sit in a golden chair,
They shall splash at a ten-league canvas
With brushes of camel's hair;
They shall have real saints to draw from,
Magdalene, Peter, and Paul,
They shall paint for an age at a sitting
And never get tired at all:
And only the Master shall praise us,

And only the Master shall blame,
And no one shall work for money,
And no one shall work for fame,
But each for the joy of the doing,
And each in his separate star,
Shall paint the thing as he sees it,
For the God of things as they are."

* JOSEPH JAMES KINYOUN, Major Medical Corps, U. S. Army.

By J. Howell Way.

Born November 25, 1860, in Yadkin County, North Carolina; died at his home in Washington, D. C., February 14, 1919, of lympho-carcoma of neck. Eldest child of Dr. John Kendrick Kinyoun, M. D., LL.D., and Elizabeth Conrad Kinyoun. The family removed to Centreview, Mo., in 1866, where the father continued the practice of medicine until his death a few years since. Dr. J. J. Kinyoun graduated M. D. from Bellevue Hospital Medical College in 1882, and practiced with his father in Missouri for several years. Appointed assistant surgeon Marine Hospital Service in 1886. Because of his interest in bacteriology and his ability he was sent to Europe, representative of the Service, and worked with Koch in Berlin when the tuberculin theory was first made known, and with Pasteur, Rouz, Calmette, Nocard, Verhoff and Metchnikoff. Founder and first director of the Hygienic Laboratory in Washington, D. C., a distinction rather than an achievement, of which it is said Dr. Kinyoun "was more proud of than any other work." While in the Service he designed the "Kinyoun-Francis" Disinfectors and Disinfecting Bargess; was also Professor Hygiene and Bacteriology 1890-2, and Special Lecturer on Immunity and Serum Therapy, 1903, at the Georgetown University—also taught Pathology and Bacteriology in the school in 1892-1899. In 1888 did post-graduate study in Johns Hopkins University. Degree of Ph. D. was conferred on him by Georgetown University in 1894. In 1895 he was decorated with the Order of Bolivar by the Republic of Venezuela "for eminent sanitary services rendered that country." In May, 1889, he was placed in charge of the United States Quarantine Station, Angel Island, Calif., where he handled many thousand Chinese and Japanese along with many troops returning from the Spanish-American war. Because he reported the presence of Bubonic Plague in California and carried out his orders to prevent its spread he encountered violent opposition and persecution, but "in the face of threats and bribes, with unswerving devotion to duty, he "went about his daily tasks, with a price hanging over his head." In 1902 he represented the Service in Japan, associated with Dr. Kitasato, in research work and the study of tropical diseases. He is said to have been the youngest officer in the Service to reach the grade of surgeon, and is also said to have been the first person in America to make a microscopical diagnosis of Asiatic cholera in this country. He resigned from the Service in 1903 to become director of the Mulford Laboratories at Glenolden, Penn. Returned to Washington, D. C., in 1907, and was

* Should have appeared in 1919 Transactions.

Professor Pathology and Bacteriology at the George Washington Medical School, 1907-9. For ten years he was Bacteriologist to the District of Columbia. In 1917-18 he was given leave of absence, resigning from the Medical Corps of the U. S. Navy to serve as Expert Epidemiologist in the Army. Was appointed Major M. R. C., serving in North Carolina and South Carolina until December 6, 1918, when he was ordered to duty in the Surgeon General's office in Washington.

He was a member of many learned societies and the author of numerous papers. Joined the Medical Society, District of Columbia, in 1908. Married June 27, 1884, to Miss Elizabeth Perry, of Centreview, Mo., only child of Col. N. W. and Catherine Elizabeth Houx Perry. He is survived by his wife and four children: Alice Eccles Kinyoun, First Lieut. Jospeh Perry Kinyoun, First Lieut. Conrad Houx Kinyoun and J. N. Kinyoun.

May 20, 1899, Dr. Kinyoun was the recipient of a complimentary dinner by the medical profession of Washington as a mark of recognition of his scientific work, especially the manufacture of Diphtheria Antitoxin in the Hygienic Laboratory.

Dr. Kinyoun never ceased to cherish a distinct fondness for the people of his native State, and his occasional visit to North Carolina, especially his visits to the meetings of the State Medical Society were always seasons of delight to him as well as entertainment and profit to those fortunate enough to know and to hear him. His was a wonderfully well-stored mind of many things calculated to both edify and enlighten. During his stay of several months in the State in 1917-18, when Major Medical Reserve Corps U. S. Army, working in conjunction with the State Board of Health on disease prevention problems, it was the happy experience of the writer to have frequent contact with him, and always to the pleasure of the former; and perhaps it is not beyond the facts to state that no son of the Old North State ever carried through a lifetime a greater affection for the land that gave him birth, or the people of the stock from which he sprang. Most appreciative of Southern ideals, Dr. Joseph James Kinyoun left behind him the honored memory of a splendid illustration of a high-grade, cultured Carolina gentleman. Peace to his ashes; perpetual honor to his name.

Dr. Cheatham:

This completes our program.

Motion to adjourn. Carried.

MEMBERS STATE BOARD OF HEALTH.

Standing, left to right: Dr. F. R. Harris, Dr. E. J. Tucker, Dr. C. O'H. Laughinghouse, Dr. Cyrus Thompson, Dr. W. S. Rankin (Sec.-Treas.)

Sitting, left to right: Dr. T. E. Anderson, Dr. E. C. Register, Dr. J. Howell Way (President), Dr. H. A. Lewis, Editor Dr. J. L. Ludlow.

Conjoint Session of the Medical Society of the State of North Carolina and the North Carolina Board of Health

Dr. Joe H. Way, President of the State Board of Health, presiding

Wednesday, April 21, 1920.

ANNUAL REPORT OF THE SECRETARY OF THE NORTH CAROLINA STATE BOARD OF HEALTH.

W. S. Rankin, *M. D.*, Secretary, Raleigh, N. C.

INTRODUTORY.

Messrs. Presidents, Members of the North Carolina State Medical Society and the North Carolina State Board of Health:

The people of North Carolina have recognized the intimate relation existing between themselves and this profession, and for that reason have entered into a partnership with the profession by legal enactment for the care of their health; moreover, they require that the State agency charged with the protection of the public health should report to you annually upon its activities. In obedience to that requirement, based upon their confidence in your interest, I am again before you. This report covers the period between April 1, 1919, and April 1, 1920.

The Board is composed of nine members, five appointed by the Governor and four elected by this Society. Within and under the direction of this Board there is an Executive Staff, composed of a central executive office and eight separate bureaus. Each bureau is a distinct subdivision of the Executive Staff and is charged with looking after a piece of health work of such importance in its general bearing, of such magnitude in scope and of such a character as to require a separate force, often with special training.

I shall now proceed to briefly report upon the work of each bureau, and following this I shall have a few words to say about the general work of the Board.

SPECIAL WORK OF THE BUREAUS.

State Laboratory of Hygiene.

During the past year the State Laboratory of Hygiene should be credited with the following items:

Item 1: The Laboratory during the past year made 9,113 diagnostic examinations, which include microscopic examinations for diphtheria bacilli, for tubercule bacilli, for gonococci, for malaria, for intestinal parasites and for the Widal reaction. If these examinations had been dependent upon private laboratories many of them would not have been done, and their health and life saving value to the State would have been lost. Had the examinations been done by private laboratories they would have cost at least $2 per examination or a total of two times 9,113, which is $18,226.

Item 2: The State Laboratory of Hygiene during the time under consideration did 9,373 Wassermann tests, many of which, again, would not have been performed, with losses to health and life, if it had not been for the convenience and economy of the State Laboratory. But had these ex-

aminations been done by private laboratories the people of the State would have paid not less than $5 apiece for each Wassermann test, or a total for this item of $46,865.

Item 3: The Laboratory in the time under consideration made 2,514 water analyses. I repeat here that the larger part of this work with its life-saving influence would have remained undone but for the State Laboratory, but if private laboratories had made these analyses the work would have cost our people not less than $5 apiece, or a total for the 2,514 analyses of $12,570.

Item 4: During the year 82,503,000 units of diphtheria antitoxin, distributed in 14,816 syringe packages of such sizes as sell on the market at ordinary commercial rates for a total of $44,672.

Item 5: The Laboratory has distributed during the past year typhoid vaccine sufficient to complete the vaccination of 150,000 persons. Many of these vaccinations, without this assistance from the Laboratory, would not have been performed and their life-saving value to the State lost. Crediting the Laboratory with the ordinary commercial price of 50 cents for three injections of typhoid vaccine, then this item of the Laboratory's work has a value to the people of the State of $75,000.

Item 6: During the year the Laboratory has furnished 98,645 doses of smallpox vaccine, which, if the people of the State had had to buy it, would have cost them $9,864.50.

Item 7: During the year 425 Pasteur treatments have been either given or furnished and every instance has saved the person treated not less than $50, so that this item of work is to be credited with a total value of 50 times $425, or $21,250.

To conclude, the Laboratory in the time under consideration expended a total of $47,597.85, and for this expenditure delivered in values to North Carolina $228,447.50.

Bureau of Tuberculosis.

During the past year the Sanatorium and the Bureau of Tuberculosis should be credited with the following items:

Item 1: The treatment for a period of 12 months of an average of 135 patients. If we assume that the sort of treatment given to these patients would have cost them, if obtained from private agencies, $30 a week or $120 a month, then the Sanatorium on this item has returned to the people of the State in the value of treatments $190,400.

Item 2: The Sanatorium has carefully examined and advised 1,013 patients for tuberculosis. Many of the examinations were of a highly technical character, including the use of both laboratory tests and X-ray observations. If we assign a life-saving value of only $10 for each examination, then this item of the work of the Sanatorium is to be credited with $10,130.

Item 3: It is impossible, of course, to give any exact value to the most important phase of the work of the Sanatorium, to-wit, its educational value. The educational work has consisted of: (1) sending back to the people of the State 250 discharged patients practically educated on the subject of tuberculosis to serve as missionaries in developing an intelligent

interest in and treatment of the disease; (2) corresponding with and sending literature to the 2,719 homes in the State from which cases of tuberculosis have been reported; (3) in the work of a full time and well qualified colored woman given to organizing colored people into leagues for the study of tuberculosis especially and preventable diseases in general; (4) in supplying 145,000 sputa cups, a number sufficient to give 400 patients a cup each day for the entire year. If we assign to all this educational activity the censurably low estimate of 100 lives saved from this disease and if we accept as the economic value of the average adult life, the age during which tuberculosis strikes, $4,000 (these figures of Farr have been raised incident to higher earning capacity) then the 100 lives saved as the result of the educational influence of the Sanatorium should be assigned a financial equivalent of $400,000.

To conclude, the Sanatorium and Bureau of Tuberculosis has expended during the last year $145,896.59, for which it has returned to the people of North Carolina in values $600,530.

Bureau for Medical Inspection of Schools.

This bureau for the time under consideration should be credited with the following items:

Item 1: The treatment of the mouths of 16,104 public school children. In this treatment the teeth were cleaned, the importance of proper care of the teeth was explained to parents and children collectively and individually, and 29,268 permanent fillings were made. If we shall assume that the treatment of each mouth at the strategic age at which the treatment was given together with the educational advice and influence to parent and child has a value of $10, then the $16,104 mouths treated are to be credited with an economic value of $161,040.

Item 2: The removal of diseased tonsils and adenoids from 1,174 public school children has been accomplished and without the loss of a single child. When one considers the far-reaching effect, not only the immediate effect, but the effect on the whole life of the child of neglecting to have this important condition treated, he can assign no smaller value than $50 for each successful operation. If this value of $50 an operation be accepted as a fair estimate, then the total financial equivalent of 1,174 operations amounts to $58,700.

To conclude, the Bureau for Medical Inspection of Schools has expended during the last year $37,774.45 and has returned to the people of the State a value of $219,740.

Bureau of County Health Work.

On the first day of April, 1919, there were ten counties at work under the standard plan for county health work in co-operation with the State Board of Health and the International Health Board. On April 1, 1920, there were 16 counties maintaining whole time co-operative county health departments. There are four additional counties that have arranged to enter upon the co-operative plan of work as soon as health officers can be obtained. The whole time co-operative county health departments operating during the time covered in this report have covered a total period of 144 months, which is equivalent to 12 departments for the 12 months.

The co-operating counties working with the Board of Health should be credited with the following items:

Item 1: 827 public health meetings have been held, reaching a total audience of 76,248 persons. Perhaps half of the lectures have been illustrated. If we assume that the advantage to the people of the State who hear these lectures is worth 10 cents per capita (of course, they would not attend if it is worth less), this item is to be credited with a value of $7,624.80.

Item 2: 1,265 newspaper articles dealing with public health have been published in the county papers of the counties with co-operating health departments. If we assign a value to this material as one cent a word, which is the usual amount paid for contributed matter, then each newspaper article would have a value of $5, and to the total number of 1,265 articles we would assign a credit of $6,325.

Item 3: The full time county health departments during the year built 7,641 sanitary privies. At another place in this report I shall point out where each sanitary privy is entitled to a financial equivalent of $5. Assuming at this time the value of $5 for each sanitary privy, then the 7,641 sanitary privies have a value to the people of the State of $38,205.

Item 4: 1,184 children have been treated for hookworm disease. If these treatments are worth $2 per child, this item has a financial equivalent of $2,368.

Item 5: 2,312 persons have been given physical examinations under the Life Extension Unit of county health work. Dr. Eugene L. Fisk of the Life Extension Institute of New York City, and Dr. Louis I. Dublin, Actuary of the Metropolitan Life Insurance Company, have recently undertaken to assemble the data on which a reasonable financial equivalent could be assigned to periodic examinations, such as the Institute has been carrying on for five or six years. Their investigations show that these examinations have a potential life-saving value of $30 apiece. Of course, the examinations which are done by the whole time county health departments are not as elaborate as those done by the Life Extension Institute, but they certainly have one-third or one-sixth the value of the examinations by the better equipped agency. Assuming a value of $5 for each of these examinations, then the 2,312 examinations performed by the whole time county health departments should be credited with a value of $11,560.

Item 6: During the year 34,365 persons were vaccinated against typhoid fever by the co-operating county health departments. We know that the vaccination of 1,000 persons against typhoid fever will certainly prevent at least five cases of the disease. These vaccinations will, therefore, prevent 171 cases of typhoid and 17 deaths from the disease. Taking the average earning capacity and expectation of the otherwise 17 victims, of typhoid fever, practically all adults, at $4,000 apiece, the lives saved have a financial equivalent of $68,000. The 154 cases that would have recovered would have cost the people concerned in loss of productive labor, in doctors', druggists' and nursing bills $200 apiece, a total of $30,800, giving us a financial equivalent for the vaccination of the 34,365 persons of $68,000 plus $30,800, or a total of $98,800.

Item 7: During the time under consideration 20,142 persons have

been vaccinated against smallpox by the co-operating county health departments. It is difficult to even guess under the present low incidence of smallpox what is the number of cases and number of deaths prevented by these vaccinations, but certainly it is worth to the public 50 cents for every person vaccinated against smallpox, and if this is a fair estimate (of course, it is away under the economic vital value), then this item should be credited with a value of $10,071.

Item 8: The co-operating health departments have given medical care during the year to 691 dependents. If we assume that the care given to these dependents is worth to the people of the State 25 cents per month per dependent, or $3 a year per dependent, then this item should be credited with an economic value of $2,073.

Item 9: During the year 10,097 contagious and infectious diseases have been treated under the provisions of the State laws and the rules and regulations adopted by the Board. Chapin points out, page 157, "Sources and Modes of Infection," that in small towns and villages and rural communities that there is a 45 to 90 per cent reduction, through reasonable quarantine measures, in contagious diseases that otherwise would occur. If we assume that without the restrictions thrown around the 10,097 foci of contagious and infectious diseases there would have occurred 33 per cent more, or 3,366 additional cases, a total of 13,463 instead of 10,097, we are in a position to make some sort of estimate of the financial value of this work to the counties; 5 per cent fatality is exceptionally low to be considered as the possible result of the 3,366 cases that did not occur. That is to say, there was here a saving of 168 lives. These lives were, for the most part, children which have a much lower economic value than the adult life which is usually put down at $4,000. Assuming only $1,000 to be the economic value of these 168 lives which we estimate to have been saved, we have a saving in dollars and cents of $168,000. Assuming the low estimate of $10 as the cost of the sickness of the remainder of the group of 3,366, that is 3,198 persons, we get a financial equivalent of sickness prevented of $31,980, which, added to the $168,000 in life losses, gives a total saving of $199,980, practically $200,000. Rather than claim too much it is best to claim too little, so let us divide the $200,000 in vital losses saved here by two and credit this item with a financial equivalent of $100,000.

To conclude, the Bureau of County Health Work has expended during the last year $64,036.03 and has returned to the people of the State in values $277,026.80.

Bureau of Engineering and Inspection.

For the time under consideration the Bureau of Engineering and Inspection should be credited with the following items:

Item 1: During the time covered by this report plans and specifications for 28 public water supplies have been submitted to the Bureau of Engineering and Inspection for its examination and approval. It is impossible to fix any financial equivalent to the value of the State's maintaining the right to approve the installation of a public water supply. Without the State's exercising this right by maintaining competent engineering supervision to pass upon plans and specifications for public water supplies it goes without

saying that many towns and cities expending funds for these purposes would sustain severe financial losses in unwise choices of water supplies, in accepting improperly designed plans and specifications and in permitting inferior material and work in installation. I know of one instance in which a town in locating its water supply before the State law requiring plans and specifications to be submitted to the Board for their approval before acceptance by the towns, found immediately after turning the water into the public mains that the water was dangerously impure, could not be economically purified, and the town had to move to another source of supply at an additional expense of $10,000.

Item 2: The reports received from ten State sanitary inspectors now engaged in the inspection of privies and enforcing the compliance with the State Privy Law, a conservative estimate places the privies that have now been made sanitary and that comply with this law at 20,000.

A statistical study of typhoid reduction in five Southern cities which installed sanitary privies and which considered the economic gain in earning capacity, doctors' bills, druggists' bills and nursing bills from typhoid fever prevention alone and left out of the consideration losses from other fly-borne fecal diseases—the diarrheas and dysenteries, especially diarrheas and dysenteries of infants—shows a value of $8 for each sanitary privy installed. To be well within, many would say too far within, a reasonable estimate of the installation of 20,000 privies let us assume, instead of $8 as the true economic value of the sanitary privy, $5. The installation, then, of 20,000 sanitary privies would have been a financial equivalent of $100,000.

Item 3: Under the stimulus of this law 70 municipalities have undertaken extensions and new installations of sewerage which will permanently remove, when completed, 15,000 open-back, disease-spreading, insanitary privies. This work is under way, but not completed. We shall perhaps be well within the limits if we say that, taking the work as a whole, 20 per cent of it, or one-fifth of it, has been accomplished. That is equivalent to the substitution of sewerage for 3,000 privies, and giving each unit of sewerage installed a sanitary economic value of $5 this item should be credited with a financial equivalent of $15,000.

To conclude, this bureau in the time under consideration has expended a total of $22,311.80 and has returned to the people of the State a financial equivalent of not less than $115,000.

Bureau for Venereal Diseases.

For the time under consideration the Bureau for Venereal Diseases should be credited with the following items:

Item 1: This bureau has reached with lectures, with the "Keeping Fit" exhibit, with high class moving picture films, and in conference with community leaders a total of 77,000 persons during the past year. Many of the lecturers were exceptionally high grade. I refer here especially to Dr. T. W. Galloway and Dr. M. J. Exner of the International Committee of the Y. M. C. A., and to Dr. Hannah Morris of the International Y. W. C. A. Committee. I should mention, too, in this connection Drs. Hughes and Burton, two colored physicians that have effectively reached

large colored audience. In addition to the educational work through personal contact, 265,000 pieces of literature dealing with sex hygiene and venereal diseases have been distributed, and one entire number of the monthly Health Bulletin has been devoted to this subject. That Bulletin has produced more favorable responses, judging from the letters and comments which we have had regarding it, than any half dozen Bulletins that we have issued in the last few years. It is impossible to assign a financial equivalent to this item as it is impossible to assign financial equivalents to the great educational influences, the press and helpful books. Their influence is beyond value. This piece of work has been the only really satisfactory phase of the sex hygiene and venereal disease program with which we have been concerned. In carrying out this item the expense of the outside agencies, paid by themselves, as the Y. M. C. A., the Y. W. C. A., and the Federal Government (through the loan of Dr. Burton) has reached a total of $7,217.03.

Item 2: The bureau has distributed free of cost to our citizens 6,183 doses of arsphenamine, which has a commercial market value of $9,274.50, and this amount should be credited as the financial equivalent of Item 2.

Item 3: The bureau, in arranging and paying one-half the expense of public dispensaries for the treatment of venereal diseases, has assisted in the giving of 51,887 treatments. What is a treatment worth? I asked a gentleman who specializes in this field what his charges for treating venereal diseases were. He said "$3 for each treatment for gonorrhea and chancroid and $100 for a 12 weeks' course of treatment for syphilis." If we estimate the value of each treatment given in the public dispensaries, for which this bureau paid one-half the cost, at $4 value each, then the 51,887 treatments would have a total value of $207,548, half of which should be credited under this item to the Bureau for Venereal Diseases; that is to say, this item has a financial equivalent of $103,774.

To conclude, the Bureau for Venereal Diseases in the time under consideration has expended a total of $42,344.52 and rendered a service to the people of the State which has a financial equivalent of $120,265.87.

The Bureau of Epidemiology.

The first condition that determines the efficiency of an agency devoted to the control of contagion is that it shall be informed promptly of the occurrence of all contagious diseases. During the past calendar year, excluding cases of influenza, the bureau has received reports of the occurrence of 28,393 contagious diseases. The presumption is, and I believe it may be relied upon in 90 per cent of the cases, that the sworn officers of the law immediately discharged their duty and threw about these foci of disease and death the reasonable restrictions provided for in our State laws.

One of the best indices of the co-operation of physicians with health departments, of the law-abiding spirit of the profession, is the proportion of reports to the total occurrence of contagious diseases as estimated on a basis of fatalities. To illustrate: We know the average fatality of typhoid fever to be ten per cent. Last year we have death certificates for 427 deaths from this disease. Therefore, we should have received 10 times 427 reports of cases, a total case occurrence of 4,270. As a matter of fact, we received only 2,956 reports of cases of typhoid fever. Either the pro-

fession in this State had an abnormally high fatality, 14 per cent, in the treatment of typhoid fever or they did not comply with the law in reporting their cases. I have mentioned this matter to illustrate the principle of checking cases by deaths rather than to criticise the profession. On the whole, I think the North Carolina medical profession is to be commended for the completeness of their morbidity reports, for their law-abiding spirit. Following the plan of estimating case occurrence from death certificates we should have reported in the State annually about 36,000 cases of reportable diseases. As I have pointed out, we received 28,393 reports, which indicates that our morbidity reports are around 80 per cent complete, not a bad comparison with most States, but at the same time not a record to be proud of or a condition with which to be satisfied.

The Bureau of Epidemiology for the past year should be credited with the following items:

Item 1: It is impossible to say how many additional cases of contagious diseases and how many additional deaths from these diseases would have occurred in the State had the work of this bureau not been done. As I have pointed out elsewhere, Dr. Chapin estimates that with reasonable restrictions thrown about contagious foci in rural districts and in small towns and villages 45 to 90 per cent reduction in the prevalence of these diseases occurs. If this bureau should be credited with only 5 per cent reduction, then it has prevented 1,500 cases of contagious disease and saved 75 lives. If one allows so low an estimate as $10 cost for each case of sickness and $1,000 as the economic value of a child's life, then the 1,500 cases prevented would have a financial equivalent of $15,000 and the 75 lives saved of $75,000, a total financial equivalent for this item of $90,000.

Item 2: During the last year the bureau directed a typhoid vaccination campaign which resulted in the vaccinatioin of 49,000 persons. It is easy to demonstrate from the facts that are available that the vaccination of 1,000 persons against typhoid fever means the prevention of five cases of the disease. The vaccination of the 49,000 persons has prevented 245 cases of typhoid fever, from which 24 persons would have died. Giving each life saved the economic value of $4,000, the usual figure accepted as representing the economic value of an adult life, this piece of work resulted in saving $96,000 in earning capacity. The campaign also prevented 221 cases, each of which, had it occurred, would have cost in earning capacity, doctors', druggists' and nursing bills not less than $200 each, or a total loss from sickness of $44,200. Adding the death loss and the sickness loss we have as the financial equivalent of this item $140,200.

To conclude, this bureau has expended during the past year $11,500 and returned to the people of the State a value of $182,200.

Bureau of Public Health Nursing and Infant Hygiene.

This bureau has succeeded and replaced the Bureau of Infant Hygiene, formerly under the direction of Mrs. Kate Brew Vaughn. The bureau was organized December 1, 1919, with Miss Rose M. Ehrenfeld as the director. The bureau is financed jointly by the State Board of Health and the American Red Cross. The personnel, when fully organized, will consist of a State supervising nurse, two assistant State supervising nurses,

a stenographer and a clerk. The total available budget of the bureau is $12,000 a year, of which the State and Red Cross each pay one-half. The organization of the bureau has been too recent to permit any sort of a financial estimate of its work. Moreover, the activities for the latter part of January and for the entire month of February were used in obtaining and supplying emergency nurses to communities with a high prevalence of influenza. In the epidemic of influenza the bureau received 92 requests for emergency nurses from 72 localities and was able to make 59 assignments.

Perhaps the most important function of this bureau is to secure properly qualified public health nurses for the counties of the State and to see that the work of these nurses is properly organized and carried out. To date the bureau has placed 13 public health nurses, of which six have been with whole time county health departments and seven in counties without whole time departments; in addition to this, the bureau will place ten nurses, now taking special courses in public health nursing, in other counties that have provided for full time nurses to begin work on the first of June. Furthermore, there are five other counties that have appropriated funds for a full time public health nurse, but for which as yet we have found no suitable nurse. This makes altogether 28 counties that have provided the necessary funds and facilities for a full time public health nurse, and of the 28, 23 will be operating the first of June, 13 now being at work. It is safe to say that before the expiration of this year this bureau will be supervising 35 or 40 full time county health nurses.

Still another important function of this bureau is the development of a correspondence course with mothers and prospective mothers for the purpose of assisting them, with proper literature, largely by multigraph letters, in the preparation for normal pregnancy and confinement, and for properly taking care of their babies. In this work the bureau is now receiving requests from about 200 women per month.

In my next annual report I shall discuss the financial equivalents of the work of this bureau, and, judging from what many authorities claim to the field of greatest possibilities in reducing death rates, namely, the population under five years of age, I anticipate that this bureau will pay on the dollar as large dividends as the State receives for any of its money invested in public health.

The Bureau of Vital Statistics.

The Bureau of Vital Statistics during the past year has registered, classified and tabulated, according to race, county, township, and the 189 causes of death 30,080 deaths, which is equivalent to a death rate of 11.8.

This bureau during the past year has registered and classified, according to race, county and township 69,791 births and 3,245 stillbirths, giving the State a birth rate of 29.0 for 1919.

The simplicity of the report for this bureau perhaps suggests that it is, relatively speaking, one of minor importance. As a matter of fact, this bureau, which costs the State about $13,000 a year, is fundamentally the most important bureau we have, for without its bookkeeping it is impossible to know the natural increase of our population, the number of deaths

from various causes and where these deaths occur. It is impossible, without the information furnished by the Bureau of Vital Statistics, to intelligently apportion funds for health work or consider measures for disease reduction.

SUMMARY OF VALUES OF BUREAUS.

The total expenditures of the nine bureaus of the Board, plus the expenditures of the Executive Departmnt, during the past year were $437,677.33. Of this amount the State contributed $286,178.48 and other agencies contributed $151,498.85. Without giving financial equivalents to the work of the Bureau of Vital Statistics, the Bureau of Public Health Nursing and Infant Hygiene, the special educational work of the Board through the Bulletin, and the work of the Executive Department, the account of the State Board of Health with the people of North Carolina stands as follows:

Expenditures	$ 437,677.33
Values returned	1,791,210.17

GENERAL BUSINESS OF THE BOARD.

The general interest of the people of North Carolina in public health and the amount of business of the State Board of Health may be indicated in the fact that the Board receives and replies to 191 individual letters a day; mails out 500 multigraph letters daily; receives requests for and furnishes 1,000 pieces of public health literature daily. This is an annual output of 70,000 individual letters, 180,000 multigraph letters, 360,000 pieces of literature. I do not include in this last figure for literature the 265,000 pieces of literature on sex hygiene and venereal diseases furnished during the last few months to the people of the State by the Bureau for Venereal Diseases, nor do I include a supply of 75,000 malaria catechisms to the North Carolina Landowners' Association for distribution to the school children of eastern North Carolina. The Landowners' Association has made the very best possible use of this malarial literature, having offered prizes to the children for the best essays on malaria, thereby insuring the interest and reading of the literature by not only the children, but their parents.

The general influence of State health work is indicated in the decline of certain important death rates.

Typhoid fever in 1914, the first year of vital statistics and when the records were incomplete, registered a death rate of 35.8 per 100,000 population, with a total of 839 deaths. This total has dropped as follows: From 1914 to 1915 from 839 to 744; in 1916 from 744 to 700; in 1917 from 700 to 726 (a slight gain); from 1917 to 1918 from 726 to 549, and in 1919, last year, the typhoid deaths were 427 as compared with 839 in 1914. Last year's death rate was 16.8 per 100,000 population, so that our death rate of 35.8 has been cut more than half in two within the last five years. Three were 412 deaths and 4,120 cases of typhoid fever less last year than we would have had with the same conditions prevailing as obtained in 1914.

Diphtheria has steadily declined from a total of 525 deaths in 1915—the first complete year of vital statistical reports—to 418 deaths in 1916,

308 deaths in 1917, 252 deaths in 1918, 242 deaths in 1919, a decrease during the five-year period of 282 deaths, or a reduction in the death rate from 22.3 to 9.5; another death rate cut more than half in two.

Tuberculosis registered a total of 3,710 deaths in 1915; dropped to 3,517 in 1916, to 3,402 in 1917, to 3,391 in 1918, and last year we are able to register only 3,005 deaths from tuberculosis, which would indicate a total saving of 705 lives a year from tuberculosis over what we were losing in 1915, and this does not take into account the increase in population. However, considering the possible relation of influenza to the rather abrupt and exceptionally large decline in the total deaths from tuberculosis last year, I do not think it would be safe to claim a reduction of 705 deaths from this disease until statistical returns for subsequent years confirm this figure. On the other hand, we are safe in claiming 500 deaths less from this disease than we would have had with the conditions of five years ago still prevailing.

Adding the 500 lives saved from tuberculosis and the 412 saved from typhoid and the 282 saved from diphtheria, we have a total of 1,194 lives saved from these three diseases. Very significant reductions have occurred in other diseases, notably infant diarrheas and pellagra. To be on the safe side, to be conservative, we shall leave the reductions out of our calculations, and to be still safer, instead of claiming 1,194 as the number of lives now being saved over what were formerly lost, let us take as a safe figure the saving of 1,000 lives.

What is the value of 1,000 lives saved? In the first place, we know that the proportion of sickness to deaths is two to one; that is to say, for every death that occurs during the year there are two persons sick in bed during the entire year. The saving of 1,000 lives, therefore, means the prevention of the loss of the economic value of 1,000 average lives, and it means the saving of the cost of sickness of 2,000 persons for an entire year. Before the war, when earning capacity was but about half what it is today, the average American life had an economic value of $1,700. According to the increased earning capacity now prevailing, that average life would have a value around $3,500. To remain chronically conservative in my estimates, let us say that a life has a value of $2,000. The saving of 1,000 lives with a value of $2,000 each is equivalent to the saving of $2,000,000. Add to this the prevention of the losses due to the sickness of 2,000 persons for the entire year. Let us assume that the cost of this sickness in loss of earning capacity, in doctors' bills, druggists' bills, and nursing bills is equivalent to only $2 a day; 2,000 persons sick for 365 days is 730,000 days of sickness, which, at a cost of $2 a day, amounts to the loss of $1,460,000. Add these two losses, losses from death and losses from sickness, together, and you have a loss of $3,460,000 which is prevented, which does not occur, because health conditions in North Carolina have changed within the last five years.

Finally, my field of vision is not so myopic as to suggest to me that the three funerals that will not occur today in North Carolina and that the 2,000 citizens of the State who are well and not sick in bed today are to be credited to the work of a single agency. Many agencies and many factors have contributed to this extension of the dominion of man over the

forces of death. Perhaps it is only fair to say that the Board of Health and its co-operative and allied agencies have played an essential role in an achievement which, in reality, is an expression of the intelligence, the interest, the law-abiding and co-operative spirit of North Carolina people.

Dr. Anderson, Raleigh:

That is the most wonderful report I have ever listened to. I was prepared for it. That is only financial amazement. When you look on the other side and see what has been prevented in pain, death and sorrow, it is amazing to think about it. We ought to encourage with our words those participating in this great battle. With the touch of the hand give them the heart to heart touch they so much need in this great work. I cannot say too much for the leader and the different members of the Board and everybody that assists in this great movement.

Dr. J. T. J. Battle, Greensboro:

I have something to do with the insurance companies, and the great eastern companies try to value a life numerically; that is, putting it at 100%. If it is a good family history, they will rate it accordingly. When a man lived in North Carolina it was 15% against him, because of his habitat, that has recently been removed in North Carolina.

Dr. Way: But in regard to other Southern States.

Dr. Battle: No, sir.

Dr. Ferrell, International Health Board, New York:

I have had an opportunity to observe particularly the expenditures and accomplishments of 12 or more Southern States, and no State in the South, I say this without fear of contradiction, can even approach North Carolina. I might add that the State Board of Health of Mississippi has announced in the past ten days they have succeeded in increasing their annual appropriation to $154,000 exclusive of Tuberculosis.

Dr. Hayne, State Health Officer of South Carolina, took Dr. Leathers of Mississippi to task and showed in 1918 the total appropriation of South Carolina was only $6,000 or $8,000. They now have exclusive of Tuberculosis $150,000 a year.

I told Dr. Hayne I was going to give Dr. Rankin possession of the two letters and they might as well look out. (App.)

Dr. Way: Hearing nothing, I will thank you for your presence, for your remaining for this session and also thank the Medical Society for the thirty minutes that this session has taken up.

Adjournment.

OFFICIAL LIST OF NORTH CAROLINA OFFICERS OF THE OFFICERS' MEDICAL CORPS OF THE ARMY OF THE UNITED STATES.

Furnished by the Adjutant General's Office, August 31, 1919.

Colonel: William LeRoy Dunn, Asheville.

Lieutenant Colonel: Joseph Howell Way, Waynesville.

Majors: Joshua Fanning Abel, Waynesville; Laurie James Arnold, Lillington; Pinkney Jones Chester, Greenville; Charles Sumner Fisher, Henderson; William Willis Green, Tarboro; Thomas Alexander Hathcock, Norwood; Reuben Adolphus McBrayer, Sanatorium.

Captains: Noah Bunyan Adams, Murphy; John Ellis Ashcraft, Monroe; Spencer Pippen Bass, Tarboro; Holman Bernard, Pinnacle; Charles Zachariah Candler, Sylva; Joseph Henry Cutchin, Whitakers; Ralph Livingston Daniels, Goldsboro; Arthur Edward Gouge, Bakersville; Ira May Hardy, Kinston; John Thomas Hoggard, Atkinson; James Edwin Kerr, Lilesville; John Daniel Kerr, Clinton; Max Canstuart King, Franklinton; Clarence Schuyler Maxwell, Beaufort; Henry Byrne Maxwell, Whiteville; George Riddle Patrick, Lowell; Frank Roxborough Ruff, Duke; LeRoy Salmons, Winston-Salem; Colin Shaw, Wilmington; Oliver Linwood Stringfield, Mars Hill; Benjamin Adams Thaxton, Roxboro; Newton Graves Wilson, Summerfield; Carl Otto Wolf, Concord; Richard Fenner Yarborough, Louisburg.

First Lieutenants: Joseph Franklin Blake, Chadbourn; Clarence Moreau Bynum, Goldston; George Hamilton Davis, Wake Forest; Daniel Alfonso Dees, Bayboro; Bertie Oscar Edwards, Asheville; Price Barringer Hall, Belmont; James DeCosta Highsmith, Fayetteville; Glenn Long, Newton; Richard Earl Martin, Charlotte; Henry Walter Tidmarsh, Bethel; John Blois Watson, Raleigh; William Moore Willis, Morehead City.

Alphabetical List of Members of the Medical Society of the State of North Carolina With Postoffice Addresses

Those marked (*) were present at the annual convention at Charlotte.

Name	*Address*
Abel, J. F.	Waynesville
*Abernethy, C. O.	Raleigh
Abernathy, E. A.	Chapel Hill
*Abernathy, H. N.	Denver
Abernathy, M. B.	Reidsville
Achorn, J. W.	Pine Bluff
Adams, C. A.	Durham
*Adams, C. E.	Gastonia
Adams, J. L.	Asheville
*Adams, M. R. (Hon.)	Statesville
*Adams, N. B.	Murphy
Adams, R. K.	Raleigh
Adkins, M. T.	Durham
*Alexander, Annie L. (Hon.)	Charlotte
Alexander, Janet	Montgomery, India
*Alexander, J. R.	Charlotte
*Allan, William	Charlotte
Allen, B. G.	Henderson
Allen, J. A.	New London
Allen, R. L.	Waynesville
Allgood, R. A.	Fayetteville
Allhands, J. M.	Cliffside
Ambler, C. P.	Asheville
*Anders, McG.	Gastonia
Anderson, Abel	Denton
*Anderson, Albert (Hon.)	Raleigh
Anderson, C. A.	Burlington
Anderson, J. G.	Asheville
*Anderson, J. A.	Gastonia
Anderson, J. R.	Morganton
*Anderson, J. W.	Albemarle
*Anderson, T. E. (Hon.)	Statesville
*Anderson, W. H.	Wilson
Anderson, W. S.	Wilson
Andrews, C. R.	Asheville
Andrews, N. H.	Rowland
Andrews, R. M.	Bostic
Anthony, J. E.	Kings Mountain
Archer, I. J.	Black Mountain
*Armfield, R.	Marshville
*Armstrong, C. W.	Salisbury
Arnold, L. J.	Lillington
*Ashbury, F. E. (Hon.)	Ashboro
Ashby, E. C.	Mt. Airy
Ashby, T. B.	Mt. Airy
*Ashcraft, J. E.	Monroe
*Ashe, J. R.	Charlotte
Ashworth, B. L.	Marion
*Ashworth, W. C.	Greensboro
Attmore, Geo. S. (Hon.)	Stonewall
*Austin, F. DeC.	Charlotte
Austin, D. R.	Charlotte
*Austin, J. A.	Charlotte
Austin, J. W.	High Point
Averitt, K. G.	Cedar Creek
Aydlette, H. T.	Greensboro
Aydlette, J. P.	Earl
Baird, C. A.	Mt. Airy
Baird, J. H.	Marshall
Baird, J. W.	Mars Hill
*Baker, H. M.	Lumberton
Baker, J. M. (Hon.)	Tarboro
Baker, W. E.	Arden
Ball, M. W.	Newport
Bane, R. H.	Durham
Bangle, J. A.	Concord
*Banner, C. W.	Greensboro
Barbee, G. S.	Zebulon
Barber, Y. M.	Macclesfield
Barefoot, J. J.	Graham
Barnes, B. F.	Elm City
Barrett, H. P.	Charlotte
Barron, A. A.	Charlotte
Basnight, T. G.	Stokes
*Bass, H. H.	Henderson
Bass, S. P.	Tarboro
Battle, G. C.	Asheville
Battle, I. P.	Rocky Mount
Battle, J. P.	Nashville
*Battle, J. T. J. (Hon.)	Greensboro
Battle, K. P. (Hon.)	Raleigh
Battle, S. W. (Hon.)	Asheville

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Baynes, R. S.	Hurdle Mills
Beall, W. P. (Hon.)	Greensboro.
Beam, H. M.	Wood
Beam, R. S.	Lumberton
Beard, G. C.	Kerr, R. F. D.
Beasley, E. B.	Fountain
Beckwith, R. P.	Rosemary
Beers, C.	Asheville
*Bell, A. E.	Mooresville
*Bell, C. W.	Raleigh
Bell, G. M.	Wakefield
Bellamy, R. H.	Wilmington
Bellamy, W. J. H. (Hon.)	Wilmington
Belton, J. F.	Winston-Salem
Benbow, J. T.	Winston-Salem
Benthall, B. F.	Aulander
Bernard, Holman	Pinnacle
Best, H. B.	Wilson
Biggs, M. H.	Rutherfordton
Billings, G. M.	Morganton
Bingham, G. D.	Sugar Grove
Bisch, L. C.	Asheville
*Bitting, N. D.	Durham
Bizzell, T. M.	Goldsboro
Black, I. R.	Landis
Blackburn, T. C.	Hickory
*Blair, A. McN.	Southern Pines
Blalock, B. K.	N. Charlotte
Blalock, N. M.	McCullers
Blevins, M.	W. Jefferson
Blue, A. McN.	Carthage
Boddie, N. P. (Hon.)	Durham
Boice, E. S.	Rocky Mount
Bolles, C. P., Jr.	Wilmington
*Bolton, M. (Hon.)	Rich Square
*Bonner, H. M.	Raleigh
Bonner, J. B.	Aurora
*Bonner, K. P. B.	Morehead City
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Boone, W. H.	Durham
Booth, S. D. (Hon.)	Oxford
Booth, T. L.	Oxford
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Bowers, M. A.	Winston-Salem
Bowling, E. H.	Durham
*Bowman, E. L.	McDonalds
Bowman, H. E.	Aberdeen
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Bown, H. H.	Asheville
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Boyles, A. C.	Bahama
*Boyles, J. H.	Greensboro
Boyles, M. F.	Dallas
Braddy, W. H.	Graham
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Brawley, R. V.	Salisbury
Bray, T. L.	Plymouth
Brenizer, A. G., Jr.	Charlotte
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Brittle, P. C.	Conway
Brooks, G. M.	Elm City
Brooks, H. M.	Dandy
*Brooks, J. E.	Blowing Rock
Brookshire, H. G.	Leicester, R. 5
Brown, E. M.	Washington
Brown, F. L.	Southport
*Brown, G. A.	Mt. Ulla
Brown, G. W.	Raeford
*Brown, J. P.	Fairmont
*Brown, J. S.	Hendersonville
*Brownson, W. C.	Asheville
Bryan, L. D.	Sneads Ferry
Bryant, C. G.	Jonesville
Bryant, M. L.	Godwin
*Bryson, D. R.	Bryson City
Bryson, E. J.	Cullowhee
Buchanan, C. L.	Union Mills
*Buchanan, E. J.	Lexington
Buckner, R. G.	Swannanoa
Buffalo, J. S.	Garner
Buie, R. M.	Everetts
*Bulla, A. C.	Winston-Salem
*Bullard, G. F.	Elizabethtown
*Bullitt, J. B.	Chapel Hill
Bullock, T. C.	Autryville
Bullock, W. B.	Oxford
*Bulluck, E. S.	Wilmington
Bunn, J. J.	Mt. Pleasant
Burbage, T. I.	Como
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Burleyson, L. N.	Concord
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Burns, W. M.	Goldston

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Bynum, C. M.	Princeton
Bynum, J.	Winston-Salem
Bynum, W. H.	Germantown
Caddell, S. W.	Elon College
Caldwell, D. G. (Hon.)	Concord
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Calloway, A. W.	Asheville
Campbell, A. C.	Raleigh
Campbell, J. I.	Norwood
Campbell, J. R.	Newton
*Campbell, J. W.	Gastonia
Candler, C. Z.	Sylva
Cannady, N. B.	Laurinburg
Cannady, S. H.	Oxford
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Carter, H. W.	Washington
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Cason, H. M. S.	Edenton
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Cliff, B. F.	Hendersonville
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Cromartie, R. S.	Garland
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Croom, G. H.	Wilmington
Crouch, A. McR.	Wilmington
Crouch, T. D.	Statesville
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Crumpler, P.	Clinton
Cummings, M. P.	Reidsville
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Dalton, D. N. (Hon.)	Winston-Salem
Dalton, W. N.	Winston-Salem
Dameron, E. L.	Star
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*Daniels, R. L.	New Bern
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*Davidson, J. E. S.	Charlotte
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Davis, J. F.	High Falls
Davis, J. M.	Winston-Salem
Davis, J. W.	Statesville
Davis, R. B.	Weeksville
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Davis, W. W.	Belmont
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*Dees, R. E.	Greensboro
Dees, R. O.	Greensboro
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Denson, H. A.	Bennett
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Dickson, A. P.	Raeford
Dillard, G. P.	Draper
Dillard, R. Jr. (Hon.)	Edenton
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Dixon, J.	Ayden
Dixon, W. H.	Ayden
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*Duffy, R. N.	New Bern
*Duncan, J. E.	Houston, Texas
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Dunn, W. L.	Asheville
Eagles, C. S.	Wilson, R. 4
Easley, P. S.	Statesville
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Edgerton, J. L.	Hendersonville
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*Edwards, F. D.	Lawndale, R. 1
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Edwards, J. D.	Siler City
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Ellington, S. B.	Wentworth
Ellington, J. H.	Sandy Ridge
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*Elliott, W. F.	Lincolnton
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Ellis, R. C.	Shelby
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*Faison, Wm. W. (Hon.)	Goldsboro
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*Fearing, Zenas	Elizabeth City
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Fenner, E. F.	Henderson
*Fetner, L. M.	Charlotte
Fetzer, P. W.	Mayodan
Fields, R. M.	Goldston
*Finch, O. E.	Apex
*Fitzgerald, J. Y.	Indian Trail
Flack, R. E.	Asheville
Fleming, M. I.	Rocky Mount
Flemming, W. D.	Enfield
*Fletcher, M. H. (Hon...)	Asheville
Flippin, J. M.	Mount Airy
Flippin, R. E. L.	Pilot Mountain

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*Flowe, R. F.	Kannapolis
Flowers, C. A.	Columbia
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Floyd, L. D.	Cerro Gorda
Flynt, S. S.	Rural Hall
Foard, Frank	Hickory
Foard, F. T.	Hickory
Foil, M. A.	Mt. Pleasant
Fortune, A. F.	Greensboro
Foster, J. F.	Bailey
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Fowler, M. L.	Zebulon
Fox, M. F. (Hon.)	Guilford College
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*Frazer, H. T.	Asheville
Freeman, R. A. (Hon.)	Burlington
Freeman, R. H.	Raleigh
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Furgerson, H. B.	Halifax
Furman, W. H.	Henderson
Futrell, L. M.	Murfreesboro
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*Gamble, J. F.	Lincolnton
*Gamble, J. R.	Lincolnton
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Garrenton, Cecil	Bethel
*Garrett, F. B.	Rockingham
*Garrett, F. J.	Rockingham
*Garrison, D. A.	Gastonia
Garriss, F. H.	Lewiston
Gary, R. H.	Murfreesboro
Gates, F. P.	Manteo
Gatling, O. C.	Knots Island
Garvey, R. R.	States Road
Gayle, E. M.	Richmond, Va.
Gentry, G. W.	Timberlake
*Gibbon, R. L. (Hon.)	Charlotte
*Gibbs, E. W.	Shelby
*Gibbs, J. B.	Burnesville
Gibson, J. S.	Gibson
*Gibson, M. R.	Raleigh
Gilreath, F. H.	N. Wilkesboro
Gilmer, C. S.	Greensboro, R. 6
Gilmore, W. D.	Mooresville
Ginn, T. L.	Goldsboro
Glascock, J. H.	Greenboro
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Glenn, H. F.	Gastonia
*Glenn, L. N.	Gastonia
Godwin, G. C.	Williamston
*Gold, C. F.	Ellenboro
Gold, G. M.	Shelby, R. 5
*Gold, R. B.	Lawndale
*Goley, W. R.	Graham
Goode, T. V.	Statesville
*Goodman, A. B.	Lenoir
Goodman, E. G.	Lanvale
Goodwin, A. W. (Hon.)	Raleigh
*Gouge, A. E.	Bakersville
Gouger, G. J.	Concord
Gove, Anna M.	Greensboro
*Grady, J. C.	Kenly
Grady, L. V.	Wilson, R. 2
Grady, W. E.	Tryon
Graham, B. R.	Wilmington
Graham, G. A.	Raeford
Graham, J.	Durham
Graham, W. A. (Hon.)	Charlotte
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Grayson, C. S.	High Point
*Green, T. M.	Wilmington
Green, W. W.	Tarboro
Greene, A. W.	Ahoskie
*Greene, J. B.	Asheville
Greene, J. C.	Greenville
*Greenwood, A. B.	Raleigh
Greenwood, S. E.	Fletcher
Grier, C. T.	Carthage
Griffin, J. A. (Hon.)	Clayton
Griffin, M. A.	Morganton
*Griffin, W. R.	Asheville
*Griffith, F. W.	Asheville
Griffith, L. M.	Asheville
Grigg, W. T.	Lawndale
Griggs, J. B.	Elizabeth City
Griggs, W. T.	Poplar Branch

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*Halford, J. W.	Lillington
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Hall, P. B.	Belmont
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Hammock, J. C.	Walkertown
Hammond, A. F.	Pollocksville
Hamrick, J. Y.	Boiling Springs
*Hamrick, T. G.	Shelby
*Hand, E. H.	Pineville
*Hanes, F. M.	Winston-Salem
Hanes, J. L.	Pine Hall
*Hardee, P. R.	Stem
*Hardin, E. R.	Lumberton
Hardison, W. H.	Cresswell
*Hardy, I. M.	Kinston
Hargrove, R. H. (Hon.)	Robersonville
*Hargrove, W. F.	Kinston
Harper, J. H.	Snow Hill
Harper, J. M.	Holly Springs
Harrell, G. N.	Murfreeesboro
Harrell, L. B.	Caroleen
Harrell, S. N.	Tarboro
Harrell, W. H.	Williamston
Harris, A. G.	Fairfield
*Harris, D. W.	Maxton
Harris, F. R. (Hon.)	Henderson
Harris I. A. (Hon.)	Alexander, R. 2
Harris, J. H.	Franklinton
Harrison, A. S.	Enfield
Harrison, E.	Greensboro
Harrison, H. H.	Asheville
Harriss, A.	Wilmington
Hart, E. R.	Wilmington
*Hartsell, F. E.	Oakboro
*Hartsell, J. A.	Concord
Hassell, J. L.	Creswell
*Hathcock, T. A.	Norwood
Hayes, R. B.	Hillsboro
Hays, A. H.	Fairmont
Haywood, F. J. (Hon.)	Raleigh
*Haywood, H. B.	Raleigh
Haywood, H. (Hon.)	Raleigh
*Hayworth, C. A.	Asheboro
Hayworth, R.	Asheboro
*Hege, J. R.	Clemmons
Heilig, H. G.	Salisbury
Helsabeck, R. S.	Mizpah
*Hemingway, J. D.	Bethel
Henderson, C. C.	Mt. Olive
Henderson, R. B.	Franklinton
*Henderson, S. McD.	Charlotte
Herbert, F. L.	Andrews
Herbert, W. P.	Asheville
Herring, B. S.	Wilson
Herring, W. C.	Parson, Kansas
*Herron, A. M.	Charlotte
Hester, J. R.	Knightsdale
Hiatt, H. B.	High Point
Hickman, M. T.	Hudson
Hicks, C. S.	Durham
Hicks, I. F.	Dunn
Hicks, R.	Henrietta
Hicks, W. N. (Hon.)	Durham
Highsmith, C.	Dunn
Highsmith, J. D.	Fayetteville
*Highsmith, J. F.	Fayetteville
Highsmith, S.	Fayetteville
Highway, S. C.	Murphy
Hill, D. J.	Lexington
Hill, J. N.	Murphy
Hill, L. H. (Hon.)	Germanton
*Hill, W. I.	Albemarle
Hill, W. L.	Lexington, R. 4
Hilton, J. J.	Greensboro
Hines, E. R.	Rocky Mount
Hipps, A. T.	Asheville
Hobgood, J. E.	Thomasville
Hocutt, B. A.	Clayton
Hodges, J. M.	Cranberry
*Hodgin, H. H.	Red Springs
Hoggard, W. A.	Woodville
Hollar, O. L.	Hickory
*Hollingsworth, E. M.	Mt. Airy
*Hollingsworth, E. T.	Clinton
Hollingsworth, R. E.	Mt. Airy
*Holloway, O. W.	Durham
Holloway, R. L.	W. Durham
Hollyday, W. M.	Asheville
Holmes, A. B.	Council
*Holt, D. W.	Duke
Holt, R. D.	Cherokee
Holt, T. J.	Warrenton
*Holt, W. P.	Duke

Name	*Address*
Holt, W. T.	McLeansville
Honnet, J. H.	Wilmington
Hood, J. S. B.	Kings Mountain
Hooks, Thel.	Smithfield
Hooper, D. D.	Sylva
Hooper, J. W.	Wilmington
*Hoover, C. H.	Crouse
Horsley, H. T.	Franklin
Horton, H. M.	Macon
Horton, M. C.	Raleigh
Horton, W. C.	Raleigh
Horton, W. P.	N. Wilkesboro
Houck, A. F.	Lenoir
Houser, W. H.	Cherryville
Houser, E. A.	Shelby
*Houser, O. J.	Charlotte
Hovis, L. W.	Charlotte
Howe, W. B.	Hendersonville
Howell, W. L.	Ellerbe, R. F. D.
Hubbard, C. C.	Farmer
Hudson, C. C.	Charlotte
Hughes, F. W. (Hon.)	New Bern
Hunnicutt, W. J.	Asheville
*Hunsucker, C. L.	Hickory
Hunt, J. F.	Casar
Hunter, B. R.	Parsons, Kansas
Hunter N. C.	Laurinburg
Hunter, J. V.	Asheboro
*Hunter, L. W. (Hon.)	Charlotte
*Hunter, Myers	Charlotte
*Hunter, M. C.	Huntersville
*Hunter, W. B.	Gastonia
Hurdle, S. W.	Winston-Salem
Huston, J. W.	Asheville
Hutchens, E. M.	N. Wilkesboro
*Hutchison, S. S.	Bladenboro
Hyatt, F. C.	Greensboro
*Ingram, C. B.	Mt. Gilead
Irwin,, Henderson	Eureka
Irwin, H. C.	Charlotte
*Irwin, J. R. (Hon.)	Charlotte
Ivey, H. B.	Goldsboro
Izlar, H. L.	Winston-Salem
Jackson, C. C.	Yeatesville
*Jackson, W. L.	High Point
Jackson, W. P.	61 Broadway, N. Y.
*James, W. D.	Hamlet
*Jarboe, Parran	Greensboro
Jarmon, F. G.	Roanoke Rapids
Jenkins, C. L.	Raleigh
*Jenkins, J. H.	Gastonia
*Jennings, R. G.	Winston-Salem
Jerome, J. R.	Wingate
Jett, S. G.	Reidsville
Jewett, R. D. (Hon.)	Wilmington
John, Peter	Laurinburg
Johnson, B. C.	Bunn
Johnson, F.	Cerro Gorda
Johnson, H. H.	Louisburg
Johnson, J. B.	Old Fort
Johnson, L.	Gastonia
Johnson, N. M. (Hon.)	Durham
Johnson, R. W.	Apex
*Johnson, T. C.	Lumberton
Johnson, W. A.	Reidsville, R. F. D.
Johnson, W. C.	Canton
*Johnson, W. M.	Winston-Salem
*Johnston, J. G.	Charlotte
Johnston, R. H.	Wilson
*Johnston, W. W.	Winston-Salem
*Jonas, J. F.	Marion
Jones, A. G.	Walnut Grove
Jones, A. F.	Ararat
Jones, Clara E.	Goldsboro
Jones, C. M.	Grimesland
Jones, E. E.	Elm City
*Jones, J. W.	Boone
Jones, T. J.	Lansing
Jones, T. L.	Lansing
*Jones, W. M. J.	Greensboro
Jordan, A. C.	Durham
Jordan, C. S.	Asheville
*Jordan, T. M. (Hon.)	Raleigh
*Jordan, W. S.	Fayetteville
Joyner, J. C.	Burlington
Joyner, C. C.	Farmville
Juat, F.	Raeford
Judd, E. C.	Raleigh
Judd, J. M.	Cardenas
*Julian, C. A.	Thomasville
*Jurney, P. C.	Turnersburg
Justice, G. B.	Marion
Justice, L. H.	Littleton
*Justice, Z. K.	Davidson
Kapp, H. H.	Winston-Salem
*Keiger, J. A.	Raleigh

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*Keiger, O. R.	Winston-Salem
*Kendrick, R. L.	Elizabeth City
*Kennedy, J. P.	Charlotte
*Kent, A. A.	Lenoir
Kernodle, C.	Elon College
Kerr, J. D., Jr.	Clinton
Kerr, J. E.	Winston-Salem
*Kibler, W. H.	Morganton
Killian, P. B.	Hayesville
*Killian, R. B.	Lincolnton
*King, P. M.	Charlotte
*King, R. M.	Concord
Kirby, G. S.	Marion
Kirk, W. R.	Hendersonville
Kirkman, T. A.	Siler City
Kizer, W. C.	Reepsville
Kluttz, D.	Washington
*Klutz, A. F.	Maiden
Klutz, P. J.	Maiden
Knepp, J. W.	Curham
Knight, J. B. H. (Hon.)	Williamston
Knight, W. P.	Greensboro
Knoefel, A. E.	Black Mountain
Knowles, D. L.	Rocky Mount
Knox, A. W. (Hon.)	Raleigh
Knox, J. Jr.	Lumberton
Koonce, S. E.	Wilmington
Kornegay, G. E.	Kinston
*Kornegay, L. W.	Rocky Mount
*Lackey, F. H.	Fallston
*Lafferty, R. H.	Charlotte
*Lamm, I. W.	Lucama
Lancaster, R. M.	Dobson
Landen, J. F.	Chinquapin
Lane, J. L.	Rocky Mount
Lane, P. P.	Wilson
Large, H. L.	Rocky Mount
*Lassiter, C. L.	Fremont
Lassiter, H. G.	Weldon
*Laton, J. F.	Albemarle
*Lattimore, E. B.	Shelby
*Laughinghouse, C. O'H.	Greenville
Lawrence, B. J.	Raleigh
*Lawrence, C. S.	Winston-Salem
Lawson, R. B.	Chapel Hill
Leak, W. C.	East Bend
Ledbetter, J. McQ.	Rockingham
Lee, L. V.	Lattimore
*Lee, R. E.	Lincolnton
Leggett, K. (Hon.)	Hobgood
Leggett, V. W.	Hobgood
*Leinbach, R. F.	Charlotte
Lentz, C. M.	Albemarle
Lewis, G. W.	Wilson
Lewis, H. W. (Hon.)	Jackson
*Lewis, R. H. (Hon.)	Raleigh
Lilly, J. M.	Fayetteville
Linney, R. Z.	Charlotte
*Linville, A. Y.	Winston-Salem
Lister, E. W.	Weeksville
Lister, J. L.	Jackson
*Little, E. E.	Statesville
Livingston, E. A.	Gibson
Lloyd, B. B.	Chapel Hill
Lockett, E. A.	Winston-Salem
*Loftin, P. B.	Beaufort
Logan, F. W. F.	Union Mills
*Long, B. L. (Hon.)	Hamilton
Long, D. T.	Hurdle Mills
*Long, E. F.	Lexington
Long, Edgar M.	Oak City
Long, F. Y.	Catawba
Long, Glenn	Newton
*Long, H. F.	Statesville
*Long, J. W. (Hon.)	Greensboro
Long, T. W. M.	Roanoke Rapids
*Long, V. McK.	Winston-Salem
Long, W. T.	Roxboro
Looney, J. J. W.	Rocky Mount
*Lord, Margery J.	Asheville
Love, B. E.	Roxboro
Love, W. J. (Hon.)	Wilmington
*Love, W. M.	Unionville
Lovelace, T. C.	Henrietta
*Low, C. E.	Wilmington
*Lowery, J. R.	Raleigh
*Lubchenko, N. E.	Newells
Lyday, C. E.	Gastonia
*Lyle, S. H.	Franklin
Lynch, J. M.	Asheville
Lyon, B. R.	
Lyon, E. H.	Bahama
Lyon, H. W.	Windsor
MacIntosh, L. C.	Henderson
MacConnell, J. W.	Davidson
*MacNider, W. DeB.	Chapel Hill

Name	*Address*
MacPherson, G. S.	Asheville
McAdams, C. R.	Belmont
McAnally, W. J.	High Point
*McBrayer, L. B.	Sanatorium
*McBrayer, R. A.	Sanatorium
McBryde, M. H.	Reidsville
McCain, A. W.	Waxhaw
*McCain, H. W.	High Point
McCain, P. P.	Sanatorium
McCall, A. C.	Rocky Mount
McCampbell, J.	Morganton
McCanless, W. V.	Danbury
McClees, E. C.	Elm City
McClees, J. E.	Oriental
McClelland, J. O.	Maxton
*McCombs, C. J.	Gastonia
*McCotter, S. E.	Bayboro
McCoy, T. M.	Mt. Holly
McCracken, C. M.	Fairview
McCracken, J. R.	Waynesville
McCuiston, A. M.	Richlands
McCullers, J. J. L.	McCullers
McDade, B. B.	Corbett, R. 1
*McDaniels, L. E.	Lasker
McDonald, A. A.	Jackson Springs
McDonald, A. D. (Hon.)	Wilmington
McDowell, F. C.	Zebulon
McElwee, R. S.	Statesville
*McFayden, P. R.	Concord
McFayden, O. L.	Fayetteville
McGee, J. W.	Raleigh
McGehee, J. W.	Reidsville
McGougan, J. V.	Fayetteville
McIntosh, D. M.	Old Fort
*McIntosh, W. R.	Roberdell
McIver, E. M.	Jonesboro
McIver, L.	Sanford
*McKay, H. W.	Charlotte
*McKay, J. F.	Buies Creek
McKee, J. S.	Raleigh
McKenzie, B. W.	Salisbury
*McKenzie, W. W.	Salisbury
McKethan, D. G.	Fayetteville
McKethan, J. A.	Fayetteville
*McLaughlin, C. S.	Charlotte
*McLaughlin, J. E.	Statesville
McLean, A.	Laurinburg
McLemore, G. A.	Clayton, R F. D.
McLeod, A. H.	Aberdeeen
McLeod, G. M.	Carthage
McManus, W. L.	Bonlee
McMillan, B. F. (Hon.)	Red Springs
McMillan, E. G.	Maxton
McMillan, J. D. (Hon.)	Edenton
*McMillan, J. L. (Hon.)	Red Springs
McMillan, J. M.	Candor
McMillan, R. D.	Red Springs
McMillan, W. D. (Hon.)	Wilmington
McMullan, T. S.	Elizabeth City
*McNairy, Caroline	Lenoir
*McNairy, C. B.	Kinston
McNeill, J. W. (Hon.)	Fayettevivlle
McPhail, L. D.	Rockingham
*McPherson, C. W.	Burlington
McPherson, R. G.	Saxaphaw
*McPherson, S. D.	Durham
McRae, J. D.	Asheville
McRae, N.	Littleton
Macon, G. H.	Warrenton
Macon, P. J.	Warrenton
Mallett, E. P.	Asheville
Malloy, S. A.	Yanceyville
Malone, J. E.	Louisburg
Maness, J. M.	Ellerbe
Mangum, C. P.	Kinston
Mangum, C. S.	Chapel Hill
*Mann, I. T.	High Point
Mann, S. M.	Moyock
*Manning, J. M.	Durham
Manning, I. H.	Chapel Hill
Mariner, N. B.	Belhaven
Marr, M. W.	Pineburst
*Martin, J. A.	Lumberton
Martin, J. F.	Benson
Martin, J. H.	Battleboro, R. F. D.
Martin, J. W.	Roanoke Rapids
*Martin, M. S.	Mt. Airy
Martin, S. L.	Leaksville
Martin, W. C.	Mocksville
Martin, W. J.	Davidson
Matheson, R. C.	Madison
Matheson, J. P.	Charlotte
Matthews, J. O.	Clinton, R. F. D.
*Matthews, M. L.	Sanford
Matthews, T. A.	Castalia
Matthews, W. W.	Spray

Name	*Address*
*Maxwell, C. S.	Beaufort
*Maxwell, H. B.	Whiteville
Maxwell, J. F.	Pink Hill
Mayerberg, I. W.	Selma
Meadows, E. B.	Oxford, R. F. D.
Meadows, W. J.	Greensboro
Mebane, W. C.	Wilmington
Meisenheimer, T. F. (Hon.)	Morven
*Meisenheimer, C. A. (Hon.)	Charlotte
Melvin, W. C.	Duke, R. 2
Menzies, H. C.	Hickory
Meriwether, B. M.	Asheville
Meroney, B. B.	Murphy
Merritt, J. H.	Woodsdale, R. 2
Michaux, E. R.	Greensboro
Miles, M. S.	Greensboro
Miller, J. F.	Wilmington
*Miller, R. C.	Mayworth
Miller, R. B.	Goldsboro
Milliken, J. S.	Moncure
Mills, C. H. C.	Charlotte
Mimms, C. W.	Winston-Salem
Minor, C. L.	Asheville
Mitchell, G. W.	Wilson
Mitchell, J. H.	Ashokie
Mitchell, P. H.	Ashokie
Mitchell, W. F.	Shelby
*Mitchener, J. S.	Edenton
*Mock, F. L.	Lexington, R. 3
Monk, H. D.	Trenton
*Monk, H. L.	Salisbury
Monroe, J. P.	Sanford
*Monroe, W. A. (Hon.)	Sanford
Montague, S. S.	Roxboro, R. 2
Montgomery, H. M.	Burlington
*Montgomery, J. C.	Charlotte
Montgomery, K. E.	Waynesville
Moore, A. W.	Charlotte
Moore, B. S.	Charlotte
Moore, C. E.	Greensboro
*Moore, C. E. (Hon.)	Wilson
*Moore, E. G. (Hon.)	Elm City
Moore, J. E.	Mt. Olive
Moore, J. N.	Marshall
*Moore, K. C.	Wilson
*Moore, O.	Charlotte
Moore, R. A.	Winston-Salem
Moore, T. V.	Acme
Moore, W. B.	Mt. Airy
Moore, W. H.	Wilmington
Moore, W. J.	Asheboro
*Moorefield, R. H.	Westfield, R. 1
Morrill, D. S.	Farmville
Morrill, J.	Falkland
Morris, E. R.	Asheville
Morris, G. B.	Mt. Olive
*Morris, J. A.	Oxford, R. F. D.
Morrow, W. C.	Murphy
Morse	
Morse, L. B.	Hendersonville
Moseley, C. W.	Greensboro
Moseley, H. P.	Farmville
Moseley, Z. V.	Kinston
*Moser, W. D.	Burlington
Mudgett, W. C.	Southern Pines
Munroe, J. P. (Hon.)	Charlotte
*Murphy, J. G.	Wilmington
Murphy, W. B.	Snow Hill
*Myers, Alonzo	Charlotte
*Myers, J. Q.	Charlotte
*Nalle, B. C.	Charlotte
*Nance, G. B.	Monroe
Nash, J. F.	St. Pauls
Neal, A. N.	Walnut Cove
Neal, J. W.	Monroe
Nelson, R. J.	Robersonville
Nesbitt, C. T.	Akron, Ohio
Newbern, J. M.	Jarvisburg
Newby, G. E.	Hertford
Newell, H. A.	Henderson
Newell, J. O.	Louisburg
*Newell, L. B.	Charlotte
*Newman, H. H.	Salisbury
Nichols, A. F.	Roxboro
Nichols, A. S.	Sylva
Nichols, R. E.	Durham
Nicholson,	Mt. Gilead
Nicholson, B. M.	Ringwood
Nicholson, C. R.	Harmony
*Nicholson, J. L.	Washington
Nicholson, P. A.	Washington
*Nisbet, Heath	Charlotte
*Nisbet, W. O.	Charlotte
Noble, R. J. (Hon.)	Selma
Noble, R. P.	Raleigh
Nobles, J. E. (Hon.)	Greenville

Name	*Address*
Noell, R. H.	Rocky Mount
Norfleet, E. P.	Roxobel
Norfleet, L. E.	Tarboro
Norman, G. W.	Pomona
Norman, J. S.	Boardman
Norment, T. A.	Lumberton
Norris, H.	Rutherfordton
*Northington, J. M.	Charlotte
Norton, N. S.	Norlina
*Oates, Geo.	Grover
Ogburn, H. H.	Greensboro
Olive, P. W.	Wade
Olive, W. W.	Durham
*Oliver, A. S.	Benson
Orr, C. C.	Asheville
Orr, C. V.	Andrews
Orr, P. B.	Asheville
*Outland, C. L.	Tarboro
Pace, K. B.	Greenville
*Packard, G. H.	White Rock
Page, B. W.	Wilmington
*Palmer, B. H.	Shelby
Palmer, H.	Hollister
Palmer, M. C.	Tryon
*Palmer, R. W.	Gulf
Parker, C. G.	Woodland
Parker, C. P.	Seaboard
Parker, F. M.	Enfield
Parker, G. E.	Benson
Parker, J. R.	Clinton
*Parker, J. R.	Burlington
*Parker, O. L.	Clinton
*Parker, P. G.	Jackson
Parker, W. R.	Woodland
Parrott, A. DeK.	Kinston
*Parrott, J. M.	Kinston
Parrott, M. C.	Kinston
Parrott, W. T.	Kinston
*Parsons, W. H.	Charlotte
Patchin, D. F.	Rosemary
Pate, F. J.	Greensboro
Pate, J. G.	Gibson
*Patrick, G. R.	Bessemer City
Patrick, J. E.	Seven Springs
Patrick, L. N.	Gastonia
*Patterson, J. A.	Concord
*Patterson, R.	Charlotte, R. F. D.
*Payne, R. L.	Monroe
Peacock, J. W.	Thomasville
Peck, E. J.	Hot Springs
Peck, W. A.	Ramseytown
*Peeler, C. N.	Charlotte
Peeler, J. H.	Salisbury
Pegram, R. W. S.	Canton
*Pemberton, W. D. (Hon.)	Concord
Pendleton, W.	Asheville
*Pepper, J. K.	Winston-Salem
*Perkins, D. R.	Marshville
Perkins, J. R.	Winston-Salem
Perkins, S. L.	W. Jefferson
Perry, E. M.	Rocky Mount
Perry, H. G.	Louisburg
Perry, M. P. (Hon.)	Macon
Perry, V. P.	Kinston
Person, E. C.	Pikeville
Person, H. M.	Goldsboro
Person, J. B., Jr.	Selma
Person, T. E.	Stantonsburg
Peete, C. H.	Warrenton
Peters, W. A.	Elizabeth City
*Peterson, C. A.	Spruce Pines
Petree, P. A.	Dunn
*Petrie, R. W.	Charlotte, R. F. D.
*Petteway, G. H.	Charlotte, R. F. D.
Pfohl, S. F.	Winston-Salem
Pharr, T. F. (Hon.)	Concord
*Pharr, W. W. (Hon.)	Charlotte
Phifer, E. M.	Morganton
*Phillips, C. C.	Wallburg
Phillips, C. H.	Fullers
Pickett, J. A.	Burlington, R. F. D.
Picot, L. J. (Hon.)	Littleton
Pierce, S. B.	Weldon
Pittman, E. E.	Oak City
Pittman, R. L.	Fayetteville
Pitts, W. I.	Lenoir
Pollard, W. B.	Winton
Poole, C. T.	St. Pauls
*Pope, H. T.	Lumberton
Powell, H. H.	Stantonsburg
Powell, J. A.	Harrellsville
*Pressley, G. W.	Charlotte
*Pressley, J. M.	Belmont
Price, H. L.	Fairmont
Price, K. A.	Hickory
Pritchard, A. T.	Asheville

Name	*Address*
Pritchard, J. L.	Windsor
Proctor, I. M.	Raleigh
Proffitt, T. J.	Elk Park
*Pruitt, G. C.	Monroe
*Pugh, C. H.	Gastonia
Purdy, J. J.	Oriental
Purefoy, G. W. (Hon.)	Asheville
Putney, R. H.	Elm City
Putney, W. R.	Littleton
*Query, R. Z.	Charlotte, R. F. D.
Quick, F. D.	Rockingham
Quickel, T. C.	Gastonia
Quillen, E. B.	Rocky Mount
Quinn, R. F.	Magnolia
Raby, J. G.	Tarboro
Rainey, W. T.	Badin
*Ramseur, G. A.	China Grove
Rankin, P. R.	Mt. Gilead
Rankin, S. W.	Concord
*Rankin, W. S.	Raleigh
*Ranson, J. L.	Charlotte
Ray, H.	Durham
*Ray, J. B.	Leaksville
Ray, O. L.	Raleigh, R. 1
*Reaves, C. R.	Greensboro
Reaves, R. G.	Greensboro
*Reaves, W. P.	Greensboro
Redding, A. H.	Cedar Falls
Reece, J. M.	Elkin
Reed, D. H.	Morehead City
Reed, J. F.	Concord
*Reedy, H.	Rowland
Reeves, A. F.	Asheville
Reid, G. P.	Forest City
Reid, J. W.	Lowell
Reid, T. N.	Matthews
Reitzel, C. E.	High Point
*Reynolds, C. V.	Asheville
Reynolds, T. F.	Asheville
Rhodes, J. S.	Williamston
*Rhyne, R. E.	Gastonia
Rhyne, S. A.	Mooresville
Richardson, F. H.	Asheville
Richardson, W. J.	Greensboro
*Ricks, L. E.	Fairmont
Riddle, J. B.	Morganton
Rieves, J. T.	Greensboro
*Riggsbee, A. E.	Morrisville
Ring, J. W.	Elkin
Ringer, P. H.	Asheville
Roberson, C.	Greensboro
*Roberson, F.	Durham
*Roberson, G. B.	Greensboro
Roberson, M.	Durham
*Roberts, F.	Marshall
Roberts, H. C.	Coats
*Robertson, J. F.	Wilmington
Robertson, W. B.	Burnsville
Robinson, F.	Lowell
Robinson, J. D.	Wallace
Robinson, W. F.	Mars Hill
Rodgers, W. D.	Warrenton
*Rodman, J. C.	Washington
*Rodwell, J. W.	Mocksville
Rogers, J. R.	Raleigh
Rogers, W. A.	Franklin
*Root, A. S.	Raleigh
Rose, A. H.	Smithfield
Ross, G. H.	Durham
*Ross, O. B.	Charlotte
Ross, R. D.	Wadesboro
*Rosser, R. G.	Vass
Rousseau, J. P.	Winston-Salem
Rowe, H. B.	Mt. Airy
Rowe, H. E.	Newton
*Rowe, R. H.	Hickory
Royal, B. F.	Morehead City
*Royall, M. A.	Elkin
*Royster, H. A.	Raleigh
*Royster, S. S.	Shelby
Royster, T. H.	Tarboro
Royster, W. I. (Hon.)	Raleigh
Rozier, R. G.	Lumberton
Rucker, A. A.	Uree
*Ruff, F. R.	Charlotte
*Ruffin, J. B.	Powellsville
Russell, J. M.	Canton
*Sadler, R. C.	Whiteville
Saine, J. W.	Lincolnton
Saliba, John	Elizabeth City
Saliba, M. M.	Wilson
Salley, E. McQ.	Saluda
*Salmons, H. C.	Elkin
Salmons, L. R.	Winston-Salem
*Sample, R. C.	Hendersonville
*Sams, W. A.	Marshall

Name	*Address*
Sanderford, J. F.	Raleigh
Saunders, J. H.	Williamston
Saunders, S. A.	Aulander
Sawyer, C. J.	Windsor
Sawyer, W. W.	Elizabeth City
Schallert, P. O.	Winston-Salem
Schaub, O. P.	Winston-Salem
*Schenck, D. R.	Rutherfordton
Schonwald, J. T. (Hon.)	Wilmington
*Schoonover, R. A.	Greensboro
Scott, C. L.	Sanford
Scott, R. C.	Asheville
Scott, S. F.	Union Ridge
*Scruggs, W. H.	Asheville
*Scruggs, W. M.	Charlotte
Sessoms, E. T.	Turkey
*Sevier, D. E.	Asheville
*Sevier, J. T.	Asheville
Sexton, C. H.	Dunn
*Shafer, I. E.	Salisbury
Shamburger, J. B.	Star
*Sharpe, C. R.	Lexington
Sharpe, F. A.	Greensboro
Sharpe, F. L.	Statesville
Shaw, W. G.	Wagram
*Shellum, O. W.	Lincolnton
*Sherrill, C. L.	Statesville
Shields, H. B.	Carthage
Shipp, G. W.	Newton
*Shore, C. A.	Raleigh
Shreve, J. R.	Germanton
*Shuford, J. H.	Hickory
Shugart, F. C.	High Point
*Shull, J. R.	Cliffside
*Sidbury, J. B.	Wilmington
*Sigman, F. G.	Spencer
Sikes, G. T. (Hon.)	Grissom
Siler, F. L.	Franklin
*Simmons, J. O.	Charlotte
Simmons, L. L.	Greensboro
Simpson, W. P.	Louisburg
Singletary, G. C.	Clarkton
*Sink, C. S.	Wilkesboro
Siske, J. A.	Beaufort
Skinner, L. C.	Greenville
Slate, J. S.	Winston-Salem
Slate, J. W.	Walnut Cove
Slate, W. C.	Spencer
*Sloan, D. B.	Wilmington
*Sloan, H. L.	Charlotte
*Sloan, J. M.	Gastonia
Sloan, W. H.	Garland
Slocum, R. B.	Wilmington
Smart, J. B.	Andrews
Smith, A. T.	Greensboro
Smith, B. R.	Asheville
*Smith, C. E.	Ledger
Smith, C. T.	Rocky Mount
Smith, G. A.	Black Creek
Smith, G. M.	Monroe
Smith, J.	Greenville
*Smith, J. A.	Lexington
*Smith, J. B.	Pilot Mountain
Smith, J. McN.	Rowland
*Smith, J. T.	Westfield
*Smith, L. J.	Wilson
Smith, O. F.	Scotland Neck
Smith, R. A. (Hon.)	Goldsboro
Smith, R. W.	Hertford
Smith, T. A.	Badin
Smith, W. F.	Chadbourn
Smith, W. H.	Goldsboro
Smithwick, J. E.	Jamesville
*Smoot, J. E.	Concord
Smoot, M. L.	Fayetteville
Snipes, E. P.	Jonesboro
Somers, L. P.	New Castle
Sorrell, L. P.	Raleigh, R. 6
*Sossaman, J. C.	Midland
Spainhour, E. H.	Winston-Salem
Speas, W. P.	Hickory
*Speed, J. A.	Durham
Speight, J. A.	Rocky Mount
Speight, J. P.	Rocky Mount
Speight, J. W.	Roper
Speight, R. H. (Hon.)	Whitakers
Spencer, F. B.	Salisbury
*Spencer, W. O.	Winston-Salem
Spicer, J.	Goldsboro
Spicer, R. W.	Goldsboro
Spoon, A. O.	Denim
Spoon, C. C.	Kimesville
Spoon, S. C.	Greensboro
*Spruill, J. L.	Sanatorium
Staley, S. W.	Rocky Mount
Stamps, T. (Hon.)	Lumber Bridge

Name	Address
Stancell, W. W.	Raleigh
Stanley, J. H.	Four Oaks
*Stanton, D. A.	High Point
Starr, H. F.	Greensboro
Staton, L. L.	Tarboro
Steele, W. C.	Mt. Olive
Stephens, W. L.	Shiloh
Sterrett, J. R.	W. Durham
*Stevens, M. L.	Asheville
*Stevens, S. A.	Monroe
Stevenson, T. F.	Hickory
*Stewart, H. D.	Monroe
Stewart, J. T.	Summerfield, R. F. D.
Stockard, J. K.	Greensboro
Stokes, J. E.	Salisbury
Stokes, P. G.	Ruffin
Stone, W. M.	Dobson
Stone, Grady E.	Tobaccoville
Storie, J. G.	Proctor
*Street, M. E.	Glendon
Strickland, E. F.	Bethania
*Strickland, E. L.	Wilson
Strickland, W. J.	Moncure
Stringfield, S. L.	Sunburst
Stringfield, T.	Waynesville
*Strong, C. M.	Charlotte
*Strong, W. M.	Charlotte
Strosnider, C. F.	Goldsboro
Suiter, W. G.	Weldon
*Summerell, E. M. (Hon.)	China Grove
Summerell, G. H.	Ayden
Summers, C. L.	Baltimore, Md.
Sumner, R. D.	Rock Hill
Sumner, T. W.	Fletcher
Sumner, W. I.	Randleman
Surles, J. B.	Four Oaks
Sutton, C. W.	Richlands
*Sutton, W. G.	Seven Springs
Sweaney, H. M.	Durham
Sweaney, J.	W. Durham
Swann, J. F.	Semora
Sweet, W. P.	Southern Pines
Swindell, C. L.	Beaufort
*Swindell, L. H.	Washington
Sykes, G. L.	Salemburg
Tally, J. S.	Troutman
*Tankersley, J. W.	Greensboro
Tate, C. S.	Ramseur
Tate, W. C.	Banner Elk
Tatum, R. C.	Duke
*Tayloe, D. T. (Hon.)	Washington
Tayloe, Joshua	Washington
*Taylor, F. R.	High Point
*Taylor, F. V.	Stanley
Taylor, G. W.	Mooresville
Taylor, H. C.	Charlotte
*Taylor, I. M. (Hon.)	Morganton
Taylor, J. N.	Burlington
Taylor, J. T.	Madison
Taylor, T. G.	Leaksville
Taylor, W. I.	Burgaw
*Taylor, W. L.	Stovall
Taylor, W. S.	Mt. Airy
Teague, R. J.	Roxboro
*Templeton, J. M.	Cary
Tennent, G. S.	Asheville
*Terry, J. R.	Lexington
Terry, P. R.	Asheville
*Terry, W. C.	Hamlet
Thames, John	Little Rock, Ark.
Thigpen, F. L.	Hookerton
Thigpen, W. J.	Tarboro
Thigpen, H. G.	Scotland Neck
Thomas, G. G. (Hon.)	Wilmington
Thomas, J. G.	Greensboro
Thomas, W. C.	Siler City
Thomas, W. N.	Oxford
*Thompson, A. F.	Troy
*Thompson, C.	Jacksonville
Thompson, C. D.	Lincolnton
Thompson, F.	Pine Bluff
Thompson, H. A.	Raleigh
Thompson, J.	Creedmore
Thompson, J. B.	Bostic
Thompson, J. M.	Mebane
*Thompson, N. A.	Lumberton
*Thompson, S. R.	Charlotte
Thompson, S. W., Sr.	Neuse
*Thompson, W. A.	Rutherfordton
Tidmarsh, H. W.	Whittier
Tidwell, J. E.	Andrews
Tilson, J. C.	Marshall
*Todd, L. C.	Charlotte
Toole, A. F.	Asheville
*Townsend, M. L.	Charlotte
Trantham, H. T. (Hon.)	Salisbury

Name	*Address*
*Triplett, W. R.	Purlear
Troxler, R. M.	Burlington
Tucker, F. P.	Milton
*Tucker, J. H.	Charlotte
Tugman, B. W.	Warrensville
Tull, H. (Hon.)	Kinston
Turlington, H. C.	Cooper
Turner, H. G.	Raleigh
*Turner, J. M.	N. Wilkesboro
Turner, J. P.	Greensboro
Tuttle, A. F.	Spray
*Tuttle, R. G.	Walnut Cove
*Twitty, J. C.	Rutherfordton
Tydeman, F. W. L.	Wood River, Ill.
Tyner, C. V.	Lumberton
*Tyson, T. D.	Mebane
Underhill, H. P.	Wendell
Underwood, O. E.	Roseboro
Upchurch, R. T.	Henderson
Utley, H. H.	Henson
Valk, A. deT.	Winston-Salem
Vann, J. R.	Fayetteville
*Van Poole, C. M. (Hon.)	Salisbury
Vaughan, J. C.	Rich Square
Vernon, J. W.	Morganton
Vestel, W. J.	Lexington
Vick, G. D.	Selma
Von Ruck, K.	Asheville
*Wadsworth, W. H.	Concord
*Wakefiled, H. A.	Charlotte
*Wakefield, W. H.	Charlotte
*Walker, H. D.	Elizabeth City
Walker, J. B.	Gibsonville
*Walker, L. A.	Burlington
*Walker, L. D.	Charlotte
Walker, L. K.	Ashokie
*Walker, W. E.	Burlington
Wall, R. L.	Winston-Salem
*Walters, C. M.	Burlington
Ward, J. E.	Robersonville
Ward, V. A.	Robersonville
*Ward, W. H. (Hon.)	Plymouth
Warren, A. J.	Charlotte
Warren, R. F.	Prospect Hill
Warren, R. L.	Dunn
Warren, W. E.	Williamston
Washborn, B. E., Kingston, Jamaica, B. W. I.	
Watkins, F. B.	Morganton
Watkins, G. T.	Durham
Watkins, G. S.	Oxford
Watson, J. B.	Raleigh
Watson, L.	Broadway
Watson, T. W.	Maxton
Watson, W.	New Bern
*Way, J. H. (Hon.)	Waynesville
Weaver, H. B. (Hon.)	Asheville
Weaver, W. J.	Asheville
Webb, B. C.	Andrews
Webb, S. E.	Madison
*Webb, W. P.	Rockingham
*Wellborn, W. R.	Elkin
Wessell, J. C.	Wilmington
West, C. F.	Kinston
West, G. H.	Fairmont
*West, L. N.	Raleigh
West, R. M.	Salisbury
West, T. M.	Fayetteville
Weyher, V. E.	Kinston
Wharton, L. D.	Smithfield
Wheeler, J. H.	Henderson
Wheless, J. R.	Spring Hope
Whepley, F. L.	Goldsboro
Whichard, M. P.	Edenton
*Whisnant, A. M.	Charlotte
Whitaker, A. C.	Julian
Whitaker, F. A.	Kinston
Whitaker, F. C.	Enfield
*Whitaker, F. S.	Kinston
Whitaker, R. A. (Hon.)	Kinston
Whitaker, R. B.	Whiteville
White, J. W. (Hon.)	Wilkesboro
White, W. M.	Lenoir
Whitehead, J. (Hon.)	Salisbury
Whitehead, J. P.	Rocky Mount
Whitehurst, E. B.	Marshallberg
*Whitley, A. W.	Matthews, R. 19
Whitfield, W. C. (Hon.)	Grifton
*Whitley, A. D. N.	Unionville
Whitley, D. P.	Albemarle, R. 3
Whittington, J. B.	Winston-Salem
*Whittington, W. P. (Hon.)	Asheville
*Whittington, W. W.	Snow Hill
Wickliffe, T. F.	Troy, Ala.
Wiggins, J. C.	Winston-Salem
Wilkerson, C. B.	Apex

Name	*Address*
Wilkerson, C. E.	Randleman
Wilkerson, T. E.	Apex
Wilkes, G.	Sylva
Wilkins, J. C.	Haw River
Wilkins, J. W.	Mt. Olive
Wilkins, R. B.	Raeford
Wilkins, S. A.	Dallas
Williams, A. F.	Wilson
Williams, B. B.	Greensboro
Williams, C. B.	Elizabeth City
Williams, I. W.	Washington
Williams, J. A.	Greensboro
Williams, J. D.	Guilford Station
Williams, J. H. (Hon.)	Asheville
*Williams, J. M.	Warsaw
Williams, J. R.	Asheville
*Williams, L. L.	Mount Airy
Williams, L. P.	Wilmington
Williams, R. C.	Wallace
Williams, T. G.	Conetoe
Willis, A. P.	Candler
*Willis, B. C.	Rocky Mount
*Wilson, A. R. (Hon.)	Greensboro
*Wilson, F. G.	Gastonia
Wilson, J. E.	Canton, R. F. D.
Wilson, N. G.	Summerfield
Wilson, R. B.	Newton Grove
Wilson, W. E.	Mooresville
Wilson, W. P.	Madison
Windley, C. T.	Belhaven
Wingate, G. C.	Charlotte
Winstead, J. A.	Nashville
Wise, J. S.	Lincolnton
Wiseman, C. B.	Henriettta
*Wishart, W. E.	Charlotte
*Withers, G. L.	Davidson
*Withers, J. J.	Davidson
*Witherspoon, B. J.	Charlotte
Woltz, J. L.	Mt. Airy
Woodard, A. G.	Princeton
*Woodard, C. A.	Wilson
Woodard, G. B.	Kenley
Wolfe, H. C.	
Wolff, D. R.	
Wood, J. W.	Shelby, R. 3
*Woodruff, F. G.	High Point
Woodson, C. W.	Salisbury
Wooten, A. M.	Pinetops
*Wright, J. B.	Raleigh
Wright, T. H.	Charlotte
Wyatt, W.	Winston-Salem
*Yokeley, R. V.	Denton
*York, A. A.	Southmont
York, H. B.	Williamston
York, N. D.	Mebane
Young, J. J.	Clayton
Young, L. B.	Rolesville
*Yow, I. A.	Georgeville
*Zimmerman, R. U.	Lexington, R. 4
Zollicoffer, A. B.	Weldon
Zollicoffer, D. B.	Weldon

Roster of Members for 1921

BY COUNTIES

NOTE—Every physician in the State whose name we could secure has had an opportunity to supply correct information as to his name, postoffice, academic and medical education, date of State license, and date State Society was joined. A few did not take advantage of the opportunity, however. Any one finding an error should report it to the secretary of the society.

COMMITTEE ON MEDICAL EDUCATION

Dr. Wm. deB. MacNider, Chapel Hill, Chairman
Dr. James M. Parrott, Kinston
Dr. G. W. Pressly, Charlotte
Dr. H. A. Royster, Raleigh
Dr. W. L. Dunn, Asheville

ALAMANCE COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President, Charles M. Walters, Burlington	1908	1909
Univ. of Md., and Coll. of P. & S., Balt., 1908		
Secretary, C. W. McPherson, Burlington	1910	1912
Univ. of Md., 1910		
Anderson, Charles Alex., Burlington	1893	1896
P. & S. Balt., 1901		
Barefoot, J. J., Graham	1907	1916
Univ. of N. C., 1907		
Caddell, S. W., Elon College	....	1914
Univ. of Tenn., 1892		
Faucett, T. S., Burlington	1893	1900
Balt. Med. Coll., 1892		
Freeman, Richard Allen, (Hon.), Burlington	1879	1891
Goley, Wm. R., Graham	1885	1893
P. & S., Balt., 1885		
Joyner, James C., Burlington	....	1920
Kernodle, Charles, Elon College, R. No. 1	1911	1920
Univ. of Md., 1911		
McDade, B. B., Corbett, R. No. 1	....	1920
McPherson, R. G., Saxaphaw	1908	1909
Univ. of N. C., 1908		
Montgomery, Harry M., Burlington	....	1904
Moser, W. D., Burlington	1910	1904
Univ. of N. C., 1910		
Parker, John Rainey, Burlington	1901	1917
Univ. Coll. of Med., Richmond, 1901		
Pickett, John A., Burlington, R. F. D.	1894	1904
Univ. of Nashville, 1894		
Scott, S. Floyd, Union Ridge	....	1920
Spoon, Charles C., Kimesville	....	1920
Taylor, James N., Burlington	....	1905
Thompson, J. Mel, Mebane	....	1920
Troxler, R. M., Burlington	1914	1915
Univ. of Md., 1914		
Tyson, T. D., Mebane	1899	1904
Univ. Coll. of Med., Va., 1899		
Walker, L. A., Burlington	1899	1905
Univ. Coll. of Med., Va., 1898		
Walker, Walter Erwin, Burlington	1903	1905
Med. Coll. of Va., 1903		
Warren, R. F. Prospect Hill	1911	1919
Atlanta School of Med., 1911		
Wilkins, J. C., Haw River	....	1920
York, N. D., Mebane	....	1885
Louisville Med. Coll., 1878		

ALEXANDER COUNTY SOCIETY

(See Iredell-Alexander)

ALLEGHANY COUNTY SOCIETY

(No members in good standing)

ANSON COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President	....	....
Secretary	....	....
Meisenheimer, T. F., (Hon.), Morven	....	1882
Ross, Robert D., Wadesboro N. Y. Univ., 1890	1890	1912

ASHE COUNTY SOCIETY

President	....	....
Secretary, S. L. Perkins, West Jefferson Balt. Med. Coll., 1891	1892	1917
Blevins, Manly, West Jefferson Coll. of P. & S., Balt., Md.	1885	1904
Brooks, H. M., Dandy	....	1919
Colvard, J. W., Jefferson	....	1904
Jones, T. Lester, Lansing Med. Coll. of Va.	1909	1917
Jones, Thomas J., Lansing Lincoln Memorial Univ., Knoxville, 1895	....	1885
Tugman, B. W., Warrensville	....	1917

AVERY COUNTY SOCIETY

President, W. C. Tate, Banner Elk Tenn. Med. Coll., 1908	1909	1912
Secretary	....	....
Burleson, W. B. Plumtree Univ. of Md., and Coll. of P. & S., Balt., 1915	1915	1916
Hodges, Joseph M., Cranberry Univ. of Md., 1904	1906	1914
Proffitt, Thomas J., Elk Park Louisville Med. Coll., 1902	1903	1914

BEAUFORT COUNTY SOCIETY

President, E. M. Brown, Washington Bellevue Med. Coll., 1896	1896	1901
Secretary, Lewis H. Swindell, Washington Univ. of Pa., 1916	1916	1919
Bonner, J. B., Aurora Univ. of Md., 1918	1918	1920
Carter, H. W., Washington Univ. of Va., 1895	1895	1910
Jackson, C. C., Yeatesville P. & S., Balt., 1893	1893	1896
Kluttz, Dewitt, Washington Univ. of Pa., 1918	1919	1920
Nicholson, John Lawrence, Washington Univ. of N. Y., 1875	1880	1904
Nicholson, P. A., Washington P. & S. Balt., 1889	1889	1901
Nicholson, Sam T., (Hon.), Washington P. & S., Balt., 1881	1885	1885
Rodman, J. C., Washington Bellevue Med. Coll., 1892	1892	1895

Name and Address	*Licensed*	*Joined State Society*
Tayloe, David Thomas, (Hon.), Washington Bellevue Med. Coll., 1885	1885	1885
Tayloe, Joshua, Washington Bellevue Med. Coll., 1892	1892	1904
Williams, I. W., Washington Univ. of Md.	....	1920
Windley, C. T., Belhaven P. & S., Balt., 1893	1893	1910

BERTIE COUNTY SOCIETY

President, Charles J. Sawyer, Windsor P. & S., Balt., 1895	1895	1897
Secretary, Frank Henry Garriss, Lewiston Jeff. Med. Coll., 1912	1912	1918
Benthall, B. F., Aulander Med. Coll., Va., 1917	1917	1920
Capehart, Alamson, Roxobel	....	1905
Evans, L. B., Windsor Med. Coll., Va., 1900	1900	1907
Lyon, Henry Wise, Windsor Univ. of Pa., 1918	1919	1920
Norfleet, Edgar Powell, Roxobel Med. Coll., Va., 1914	1914	1920
Pritchard, John L., Windsor P. & S., Balt., 1906	1906	1908
Ruffin, Joseph B., Powellsville	....	1904
Saunders, Sheldon A., Aulander Jefferson, 1914	1914	1918

BLADEN COUNTY SOCIETY

President	....	....
Secretary, E. S. Clark, Clarkton Med. Coll. of Va., 1914	1914	1915
Bullard, G. F., Elizabethtown N. C. Med. Coll., 1915	1915	1916
Clark, D. D., Clarkton	....	1920
Clark, G. L., (Hon.), Clarkton Univ. of N. Y., 1876	1900	1904
Cromartie, R. S., Garland	....	1915
Holmes, A. B., Council Jeff. Med. Coll., 1910	1910	1914
Hutchison, S. S., Baldenboro N. C. Med. Coll., Charlotte, 1900	1911	1917
Singletary, G. C., Clarkton Univ. of Tenn., 1917	1917	1918

BRUNSWICK COUNTY SOCIETY

President	....	....
Secretary	....	
Brown, F. L., Southport	....	1919
Goodman, Erastus G., Lanvale Univ. of Md., 1891	1891	1892

BUNCOMBE COUNTY SOCIETY

President, J. M. Lynch, Asheville Univ. of Md., 1904	1912	1913
Secretary, Wm. P. Herbert, Asheville Univ. of Va., 1907	1910	1911
Adams, J. L., Asheville Jeff. Med. Coll., 1910	1910	1913

Name and Address	*Licensed*	*Joined State Society*
Ambler, Charles P., Asheville West. Reserve Univ., 1889	1890	1891
Anderson, James G., Asheville Univ. of N. C., 1906	1906	1910
Andrews, C. R., Asheville Atlanta P. & S., 1903	1917	1918
Archer, Isaac J., Black Mountain Northwestern, 1896	1905	1907
Baker, W. E., Arden Chattanooga Med. Coll., 1908	1915	1916
Battle, Geo. C., Asheville Univ. of Md., 1912	1912	1912
Battle, S. W., (Hon), Asheville Bellevue Med. Coll., N. Y., 1875	1887	1887
Beers, Charles, Asheville Med. Coll. of Ohio, 1896	1918	1920
Bisch, Louis E., Asheville	....	1919
Bown, Herbert H., Asheville Columbus, O., Med. Coll., 1892	1917	1918
Briggs, Henry H., Asheville Yale Univ. Sch. of Med., 1897	1901	1903
Brookshire, Harley G., Leicester, R. No. 5 N. C. Med. Coll., 1905	1905	1907
Brownson, Wm. C., Asheville Univ. of N. Y., 1878	1885	1885
Buckner, Rufus G., Swannanoa Univ. of Ark., 1897	1907	1909
Calloway, Arthur W., Asheville Chicago Med. Sch.; Harvard Med. Sch., 1895	1899	1904
Cheesborough, Thomas P., Asheville Univ. of N. Y., 1891	1891	1900
Cocke, C. H., Asheville Cornell Univ., 1905	1902	1908
Cocke, E. R., Asheville Jeff. Med. Coll., 1913	1914	1917
Cocke, Jere E., Asheville Louisville Med. Coll., 1905	1905	1907
Colby, C. DeW., Asheville Army Med. Sch., 1895; Univ. of Mich., 1893	1909	1912
Cotten, Clyde E., Asheville Northwestern, 1889	1901	1901
Crawford, James M., Asheville Atlanta Med. Coll., 1884	1915	1916
Denchfield, A. L., Asheville Univ. and Belle. H., N. Y., 1905	1914	1915
Dunn, Wm. L., Asheville Univ. of Mich., 1891	1900	1900
Eckel, O. F., Asheville Med. Col. of S. C., 1906	1907	1909
Elias, Lewis W., Asheville Columbia Univ., 1903	1906	1907
Flack, Roswell E., Asheville Johns Hopkins Univ., 1913	1913	1914
Fletcher, M. H., (Hon.), Asheville Bellevue Med. Coll., 1881	1881	1882
Foster, M. H., Asheville	....	1920
Frazer, H. Thompson, Asheville Coll. Phys., N. Y., 1901	1908	1909
Fresh, Wm. M., Weaverville Medico-Chirurgical Coll., Phila., 1906	1913	1919

Name and Address	*Licensed*	*Joined State Society*
Gardner, Garrett D., Asheville Lincoln Mem., 1908	1908	1909
Glenn, Eug. B., Asheville Jeff. Med. Coll., 1896	1896	1900
Grantham, Wm. L., Asheville N. C. Med. Coll., 1906	1906	1911
Greene, Joseph B., Asheville Univ. of Va., 1893	1910	1911
Griffith, F. W,. Asheville Johns Hopkins, 1906	1911	1912
Griffith, L. M., Asheville Johns Hopkins Med. Sch., 1916	1916	1917
Griffin, W. R., Asheville Jeff. Med. Coll., Phila., 1910	1910	1917
Harris, Isaac A., (Hon), Alexander, R. No. 2 Jeff. Med. Coll., Phila.	1885	1904
Harrison, H. H., Asheville Jeff. Med. Coll., 1905	1905	1918
Hipps, A. T., Asheville	....	1920
Hollyday, W. M., Asheville Univ. of Md., 1908	1914	1915
Hunnicutt, Wm. J., Asheville Univ. of Tenn., 1895	1908	1909
Huston, John Walter, Asheville Rush, Chicago, 1904	1912	1913
Jordan, Charles S., Asheville Univ. of N. Y., 1899	1891	1899
Knoefel, A. E., Black Mountain Univ. of Louisville, 1893	1914	1916
Lord, Margery J., Asheville Univ. of Mich., 1916	....	1918
MacPherson, G. S., Asheville Harvard, 1894	1919	1920
McCracken, C. M., Fairview N. C. Med. Coll., 1896	1896	1904
McRae, J. D., Asheville	....	1920
Mallett, E. P., Asheville L. I. Coll., Hosp., Brooklyn, 1889	1914	1914
Meriwether, Benj. M., Asheville Univ. of Louisville, Ky., 1915	1915	1916
Minor, Charles L., Asheville Univ. of Va., 1888	1895	1898
Morris, E. R., Asheville Louisville Med. Coll., 1896	1896	1899
Orr, Charles C., Asheville Univ. of Md., 1904	1904	1905
Orr, Peter B., Asheville Jeff. Med. Coll., 1901	1901	1904
Pendleton, Wilson, Asheville Univ. of Va., 1908	1919	1920
Pritchard, Arthur T., Asheville Jeff. Med. Coll., Phila., 1905	1905	1907
Purefoy, Geo. W., (Hon.), Asheville Jeff. Med. Coll., Phila., 1876	1884	1884
Reeves, A. F., Asheville Geo. Washington Univ., 1906	1909	1919
Reynolds, C. V., Asheville Univ. of N. Y., 1895	1895	1896
Reynolds, T. F., Asheville	....	1920
Richardson, F. H., Asheville	....	1920

Name and Address	*Licensed*	*Joined State Society*
Ringer, Paul H., Asheville P. & S., N. Y., 1904	1906	1907
Scott, R. C., Asheville Jeff. Med. Coll., 1902	1916	1919
Scruggs, W. H., Asheville Univ. of Md., 1913	1915	1917
Sevier, D. E., Asheville Jeff. Med. Coll., Phila., 1895	1895	1899
Sevier, J. T., Asheville Jeff. Med. Coll., Phila., 1895	1895	1899
Smith, B. R., Asheville Jeff. Med. Coll., 1911	1913	1914
Stevens, M. L., Asheville Balt. Med. Coll., 1891	1892	1893
Tennent, G. S., Asheville N. C. Med. Coll., 1894	1894	1898
Terry, P. R., Asheville George Washington Univ., 1906	1912	1913
Toole, A. F., Asheville Univ. of Va., 1900	1917	1918
Von Ruck, Karl, Asheville Univ. of Tubingen, 1878	1889	1891
Weaver, Henry Bascom, (Hon.), Asheville Washington Univ., Balt., 1872	1881	1882
Weaver, W. J., Asheville Jeff. Med. Coll., Phila., 1898	1897	1915
Whittington, Williard P., (Hon.), Asheville P. & S., Balt., 1882	1882	1882
Williams, John Hay, (Hon.), Asheville Med. Dept. Iowa S. Univ., 1863	1881	1882
Williams, J. Roy, Asheville Univ. of Mich., 1903	1904	1917
Willis, A. P., Candler Univ. of N. C., 1904	1904	1919

BURKE COUNTY SOCIETY

President,	....	....
Secretary, G. M. Billings, Morganton	....	1920
Anderson, Jas. Robert, Morganton Tulane Univ., 1882	1885	1903
Gayle, Edward M., Richmond, Va. Univ. of Va., 1902	1902	1902
Griffin, M. A., Morganton	....	1918
Kibler, W. H., Morganton Univ. of Pa., 1914	1914	1918
Long, Benj. L., Glen Alpine N. C. Med. Coll., 1913	1913	1914
McCampbell, John, Morganton Balt. Med. Coll., 1901	1895	1899
Phifer, Edward M., Morganton N. C. Med. Coll., 1901	1902	1904
Riddle, J. B., Morganton Vanderbilt Univ., 1898	1904	1904
Taylor, I. M., (Hon.), Morganton P. & S., N. Y., 1882	1883	1883
Vernon, James W., Morganton Jeff. Med. Coll., Phila., 1909	1909	1913
Watkins, Finso B., Morganton Jeff. Med. Coll., Phila., 1907	1907	1910

CABARRUS COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President, Geo. J. Gouger, Concord Univ. of Md., 1891	1891	1899
Secretary, John F. Reed, Concord Univ. of N. Y., 1893	1909	1912
Bangle, J. A., Concord Med. Coll., Richmond, Va., 1916	....	1919
Bunn, J. J., Mt. Pleasant N. C. Med. Coll., 1912	1913	1915
Burleyson, L. N., Concord Univ. of Md., 1891	1891	1906
Caldwell, Daniel G., (Hon.), Concord Univ. of Md., 1885	1885	1885
Flowe, J. W., Kannapolis N. C. Med. Coll., 1898	1903	1905
Flowe, R. Frank, Kannapolis N. C. Med. Coll., 1913	1914	1915
Foil, M. A., Mt. Pleasant Jeff. Med. Coll., 1891	1891	1905
Hartsell, J. A., Concord Jeff. Med. Coll., 1912	1914	1916
King, Richard M., Concord Jeff. Med. Coll., 1912	1903	1907
McFadyen, Paul R., Concord Med. Coll. of Va., 1901	1901	1904
Patterson, John A., Concord Univ. Coll. of Va., 1911	1911	1912
Pemberton, Wm. D., (Hon.), Concord Univ. of Md., 1887	1887	1887
Pharr, Theo Franklin (Hon.), Concord Bellevue Med. Coll., 1877	1881	1882
Rankin, S. W., Concord Jeff. Med. Coll., Phila., 1912	1912	1912
Smoot, J. E., Concord Balt. Med. Coll., 1893	1894	1902
Sossaman, J. C., Midland N. C. Med. Coll., 1915	1917	1918
Wadsworth, Wm. H., Concord Jeff. Med. Coll., 1911	1913	1913
Yow, I. A., Georgeville N. C. Med. Coll., 1906	1907	1910

CALDWELL COUNTY SOCIETY

President,	....	....
Secretary, W. M. White, Lenoir Atlanta Coll of P. & S., 1899	1899	1905
Carter, G. H., Kings Creek, R. F. D. Univ. of N. Y., 1877	1899	1904
Coffey, Lawrence H., Lenoir Med. Coll. of Va., 1906	1906	1913
Goodman, A. B., Lenoir N. C. Med. Coll., 1898	1897	1910
Hickman, M. I., Hudson	....	1910
Houck, Albert, Lenoir P. & S., Balt., 1884	1891	1893
Kent, Alfred A., Lenoir Jeff. Med. Coll., Phila., 1885	1885	1894
McNairy, Caroline, Lenoir	....	1919

Name and Address	Licensed	Joined State Society
Pitts, W. I., Lenoir Univ. of the South, Sewanee, 1903	1911	1913
Storie, J. G., Proctor Tenn. Med. Coll., 1898	1898	1908

CAMDEN COUNTY SOCIETY

(See Pasquotank-Camden-Dare)

CARTERET COUNTY SOCIETY

President,	....	....
Secretary, K. P. B. Bonner, Morehead City Med. Coll. of Va., 1905	1905	1905
Ball, M. W., Newport Atlanta Sch. of Med., 1909	1911	1913
Loftin, P. B., Beaufort	....	1918
Maxwell, C. S., Beaufort Univ. of the South, 1900	1899	1904
Reed, D. H., Morehead City George Washington Univ., 1901	1904	1917
Royal, Ben. F., Morehead City Jeff. Med. Coll., 1909	1904	1909
Siske, J. A., Beaufort	....	1920
Swindell, C. L., Beaufort	....	1920
Whitehurst, E. B., Marshallberg	....	1920

CASWELL COUNTY SOCIETY

President, F. P. Tucker, Milton P. & S., Balt., 1882	1885	1919
Secretary, S. A. Malloy, Yanceyville Ky. School of Med., 1897	1898	1903

CATAWBA COUNTY SOCIETY

President,	....	....
Secretary, Charles L. Hunsucker, Hickory N. C. Med. Coll., 1913	1913	1915
Blackburn, T. C., Hickory Balt. Med. Coll., 1896	1896	1909
Campbell, J. R., Newton Univ. of Md., 1876	1885	1898
Foard, Frank, Hickory, R. F. D.	....	1917
Foard, F. T., Hickory, R. F. D.	....	1904
Hollar, O. L., Hickory	....	1920
Klutz, A. F., Maiden	....	1920
Klutz, P. J., Maiden	....	1916
Long, Fred Y., Catawba Balt. Med. Coll.; N. C. Med. Coll.	1898	1898
Long, Glenn, Newton N. C. Med. Coll., 1912	1912	1915
Menzies, H. C., Hickory N. C. Med. Coll., 1894	1894	1899
Price, K. A., Hickory	....	1909
Rowe, H. E., Newton N. C. Med. Coll., Charlotte, 1905	1905	1917
Rowe, R. H., Hickory Univ. of Louisville, 1912	1912	1913
Shipp, Geo. W., Newton Hosp. Coll. of Med., Louisville, Ky., 1897	1911	1915
Shuford, Jacob Harrison, Hickory Univ. of Michigan, 1901	1902	1902

Name and Address	Licensed	Joined State Society
Speas, W. P., Hickory	....	1919
Stevenson, T. F., Hickory Louisville Med. Coll., 1893	1893	1907

CHATHAM COUNTY SOCIETY

President, R. W. Palmer, Gulf Louisville Med. Coll., 1890	1891	1891
Secretary, W. Clyde Thomas, Siler City	....	1920
Burns, W. M., Goldston P. & S., Balt., 1878	1885	1905
Denson, H. A., Bennett Coll. of P. & S., Indianapolis, Ind., 1887	1913	1913
Edwards, J. D., Siler City Louisville Med. Coll., Louisville, 1887	....	1894
Fields, Robert M., Goldston	1909	1911
Kirkman, Thomas A., Siler City	....	1905
McManus, W. L., Bonlee Atlanta Sch. of Med., 1906	1912	1913
Milliken, J. S., Pittsboro Jeff. Med. Coll., 1915	1915	1916
Strickland, W. J., Moncure Chattanooga Med. Coll., 1903	1890	1907

CHEROKEE COUNTY SOCIETY

President, S. C. Highway, Murphy Ohio Medical, 1885	1885	1898
Secretary, N. B. Adams, Murphy Tenn. Med. Coll., 1896	1909	1909
Herbert, Free Lee, Andrews Lincoln Med. Univ., Knoxville, 1904	1912	1912
Hill, J. N., Murphy Univ. of Louisville, 1909	1909	1909
Meroney, B. B., Murphy Gate City Med. Coll., Texas, 1906	1908	1909
Morrow, Wm. C. Murphy Atlanta Sch. of Med., 1907	1909	1909
Orr., C. V., Andrews Atlanta Sch. of Med., 1909	1909	1912
Smart, J. B., Andrews Grant Univ., 1900	1907	1920
Tidwell, J. E., Andrews Chattanooga Med. Coll., 1903	1913	1915
Webb, B. G., Andrews Louisville Med. Coll., 1885	1885	1885

CHOWAN-PERQUIMANS COUNTY SOCIETY

President	....	....
Secretary,	....	....
Cason, H. M. S., Edenton Univ. of Md., 1899	1899	1899
Cox, Thomas A., Hertford Univ. of Md., 1892	1907	1918
Dillard, Jr. Richard, (Hon.), Edenton Jeff. Med. Coll., 1879	1880	1880
Mitchener, J. S., Raleigh Johns Hopkins Univ., 1915	1917	1918
Smith, Robert W., Hertford Univ. of Md., 1892	1892	1918
Whichard, M. P., Edenton Univ. of Md., 1910	1910	1918

CLEVELAND COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President, T. B. Gold, Lawndale N. C. Med. Coll., 1911	1911	1915
Secretary, E. A. Houser, Shelby Balt. Univ., 1902	1902	1904
Aydlette, Joseph P., Earl Ky. Univ., 1901	1903	1903
Champion, C. O., Mooresboro Atlanta Med. Coll., 1887	1902	1898
Ellis, R. C., Shelby Balt. Med. School, 1886	....	1891
Gibbs, E. W., Shelby Univ. of N. C., 1907	1907	1918
Gold, G. M., Shelby, R. No. 5 Charlotte Med. Coll., 1911	1911	1914
Grigg, W. T., Lawndale Emory Univ. School of Med., Atlanta, 1891	1904	1906
Hamrick, J. Y., Boiling Springs P. & S., N. Y., 1916	1916	1917
Hamrick, T. G., Shelby P. & S., Balt., 1895	1904	1904
Hunt, J. F., Casar Univ. of Tenn., 1900	1900	1912
Lackey, F. H., Fallston	....	1920
Lattimore, E. B., Shelby Bellevue Med. Coll., 1897	1896	1904
Lee, Lawrence Victor, Lattimore Atlanta Sch. of Med., 1894	1897	1904
Mitchell, W. F., Shelby Univ. of Md., 1890	1900	1904
Oates, George, Grover Univ. of Louisville	1894	1904
Palmer, B. H., Shelby Louisville Med. Coll., 1896	1898	1904
Royster, S. S., Shelby Tenn. Med. Coll., 1890	1896	1904
Wood, J. W., Shelby, R. No. 3 Louisville Med. Coll., 1892	1903	1900

COLUMBUS COUNTY SOCIETY

President	....	....
Secretary, G. S. Cox, Tabor N. C. Med. Coll., Charlotte, 1911	1911	1914
Floyd, A. G., Fair Bluff Univ. of Md., 1885	1885	1904
Floyd, L. D., Cerro Gorda N. C. Med. Coll., 1911	1911	1912
Johnson, Floyd, Cerro Gorda Memphis H. M. C., 1903	1903	1904
Maxwell, Henry B., Whiteville Univ. of Md., 1902	1902	1902
Moore, T. V., Acme Balt. Med. Coll., 1901	1901	1911
Northington, J. M., Charlotte Med. Coll. of Va., 1905	1909	1909
Sadler, R. C., Whiteville N. C. Med. Coll., 1912	1912	1915
Smith, W. F., Chadbourn N. C. Med. Coll., 1904	1904	1905
Whitaker, R. B., Whiteville	1912	1913

CRAVEN COUNTY SOCIETY

Name and Address	Licensed	Joined State Society
President	....	....
Secretary	....	....
Caton, Geo. A., New Bern Med. Coll. of Va., 1898	1898	1904
Daniels, R. L., New Bern Med. Coll. of Va., 1912	1912	1919
Duffy, Leinster, New Bern P. & S., Balt., 1889	1888	1888
Duffy, R. N., New Bern Johns Hopkins, 1906	1907	1908
Hughes, Francis W., (Hon.), New Bern Univ. of Pa., 1880	1885	1885
Watson, Walter, New Bern Univ. of Pa., 1910	1900	1911

CUMBERLAND COUNTY SOCIETY

President	....	....
Secretary, H. L. Cook, Fayetteville	....	1920
Allgood, R. A., Fayetteville Univ. of Md.; Coll. of P. & S., 1912	1916	1917
Averitt, K. G., Cedar Creek Balt. Med. Coll., 1893	1893	1902
Bradford, B. M., Hope Mills	....	1920
Bullock, Thomas C., Autryville P. & S., Balt., 1885	1885	1905
Highsmith, J. D., Fayetteville	....	1920
Highsmith, J. F., Fayetteville Jeff. Med. Coll., Phila., 1889	1889	1893
Highsmith, Seavy, Fayetteville Univ. Med. Coll. of Va., 1901	1901	1902
Jordan, Wm. S., Fayetteville Univ. of N. C., Med. Dept., 1906	1906	1907
Lilly, James M., Fayetteville Univ. Coll. of Med., Va., 1903	1903	1904
McFadyen, O. L., Fayetteville	...	1920
McGougan, J. V., Fayetteville Univ. of Md.; Coll. of P. &. S., Balt., 1893	1893	1909
McKethan, D. G., Fayetteville Univ. Coll. of Med., Va., 1899	1899	1899
McKethan, John Alex., Fayetteville N. C. Med. Coll., 1901	1901	1904
McNeill, Jas. W., (Hon.), Fayetteville Bellevue Med. Coll., 1876	1876	1876
Olive, P. W., Wade P. & S., Balt., 1907	1907	1909
Pittman, R. L., Fayetteville Univ. of Md., 1906	1910	1912
Smoot, Morris L., Fayetteville Univ. Coll. of Med., Va., 1903	1903	1904
Vann, J. R., Fayetteville	....	1920
West, T. M., Fayetteville Univ. of Md., 1908	1910	1920

CURRITUCK COUNTY SOCIETY

President	....	....
Secretary, S. M. Mann, Moyock P. & S., Balt., 1895	1895	1904
Cowell, Will, Shawboro Ky. School of Med., 1893	1909	1911

Name and Address	*Licensed*	*Joined State Society*
Gatling, Oscar C., Knots Island Univ. of Md., 1910	1910	1918
Griggs, W. T., Poplar Branch Univ. of Va., 1906	1896	1901
Newbern, J. M., Jarvisburg Georgetown Univ., Washington, 1898	1899	1900

DARE COUNTY SOCIETY

(See Pasquotank-Camden-Dare)

DAVIDSON COUNTY SOCIETY

President, E. J. Buchanan, Lexington Univ. of Md., 1892	1892	1900
Secretary, E. F. Long, Lexington Med. Coll. of Va., 1909	1909	1912
Anderson, Abel, Denton	....	1904
Clodfelter, C. M., Lexington P. & S., Balt., 1905	1905	1907
Hill, David Joseph, Lexington P. & S., Balt., 1893	1893	1894
Hill, W. Lee, Lexington, R. No. 4 P. & S., Balt., 1893	1893	1904
Hobgood, J. E., Thomasville Jeff. Med. Coll., Phila., 1907	1907	1917
Julian, Charles A., Thomasville Louisville Med. Coll., 1888	1891	1892
Mock, Frank Lowe, Lexington, R. No. 3 N. C. Med. Coll., Charlotte, 1908	1908	1911
Peacock, James Walter, Thomasville Tulane Univ., La., 1901	1901	1905
Phillips, C. C., Wallburg N. C. Med. Coll., Charlotte, 1912	1912	1917
Sharpe, C. R., Lexington Jeff. Med. Coll., Phila., 1914	1914	1917
Smith, J. A., Lexington N. C. Med. Coll., Charlotte, 1915	1915	1917
Terry, J. R., Lexington Univ. of Louisiana, 1911	1912	1912
Vestal, Willis Jasper, Lexington P. & S., Balt., 1883	1885	1893
Yokeley, Raymond V., Denton N. C. Med. Coll., 1911	1911	1912
York, Alexander Arthur, Southmont Chattanooga Med. Coll., 1907	1907	1909
Zimmerman, Robert U., Lexington, R. No. 4 N. C. Med. Coll., Charlotte, 1901	1901	1904

DAVIE COUNTY SOCIETY

President, W. C. Martin, Mocksville P. & S., Balt., 1888	1888	1904
Secretary, C. R. Nicholson, Harmony N. C. Med. Coll., 1912	1912	1916
Byerly, Andrew B., Cooloomee Univ. Coll. of Med., Va., 1896	1896	1904
Rodwell, John W., Mocksville P. & S., Balt., 1895	1895	1896

DUPLIN COUNTY SOCIETY

President, John W. Carroll, Wallace Univ. of Md., 1903	1903	1903

Name and Address	*Licensed*	*Joined State Society*
Secretary, R. C. Williams, Wallace Univ. of Md., 1912	1915	1916
Carr, Ransom Lee, Rose Hill Balt. Med. Coll., 1907	1908	1909
Crocker, Wm. D., Warsaw Louisville Med. Coll., 1897	1896	1904
Farrior, J. W., Warsaw Univ. of Pa., 1912	1913	1917
Landen, Jefferson F., Chinquapin Univ. Coll. of Med., Va., 1905	1905	1907
Maxwell, J. F., Pink Hill	....	1917
Quinn, Robert F., Magnolia N. C. Med. Coll., 1912	1913	1916
Robinson, J. D., Wallace	....	1917
Williams, James Marcus, Warsaw Univ. of Md., 1902	1902	1902
DURHAM-ORANGE COUNTY SOCIETY		
President, Foy Roberson, Durham Jeff. Med. Coll., 1909	1909	1912
Secretary, J. A. Speed, Durham Jeff. Med. Coll., 1914	1914	1916
Abernathy, E. A., Chapel Hill Med. Coll. of Va., 1901	1901	1914
Adams, C. A., Durham P. & S., Balt., 1892	1892	1901
Adkins, M. T., Durham Johns Hopkins, 1907	1915	1916
Bane, R. H., Durham Univ. of Md., 1914	1914	1920
Bitting, Numa Duncan, Durham Jeff. Med. Coll., 1907	1907	1909
Boddie, Needham, P., (Hon.), Durham P. & S., Balt., 1883	1883	1883
Booker, Lyle Steele, Durham Univ. Coll. of Med., Va., 1908	1910	1911
Boone, W. H., Durham N. C. Med. Coll., 1902	1902	1910
Bowling, Edwin Holt, Durham P. & S., Balt., 1891	1890	1908
Boyles, Augustus C., Bahama Univ. of Md., 1887	1887	1912
Bullitt, J. B., Chapel Hill Univ. of Va., 1897	1914	1915
Cheatham, Archibald, (Hon.), Durham Univ. of Md., 1888	1888	1888
Coppridge, W. M., Durham Jeff. Med. Coll., 1918	1919	1920
Darden, O. B., Durham Med. Coll. of Va., 1918	1918	1920
Fassett, Burton W., Durham Balt. Med. Coll., 1898	1899	1909
Felts, Robert L., Durham Univ. of Md., 1898	1901	1909
Graham, Joseph, Durham Univ. of Pa., 1902	1902	1906
Hays, R. B., Hillsboro Univ. of Md., 1906	1910	1917
Hicks, Calvin S., Durham Univ. of Md., 1904	1904	1904
Hicks, W. N., Durham Med. Colll. of Va., 1864	1885	1885

Name and Address	*Licensed*	*Joined State Society*
Holloway, O. W., Durham Med. Coll. of Va., 1901	1901	1917
Holloway, Robert Lee, W. Durham Med. Coll. of Va., 1893	1893	1901
Johnson, Norman M., (Hon.), Durham P. & S., Balt., 1877	1879	1879
Jordan, Archibald C., Durham P. & S., Balt., 1881	1895	1904
Knepp, J. W., Durham Med. Coll. of Va., 1905	1919	1920
Lawson, R. B., Chapel Hill Univ. of Md., 1902	1915	1920
Lloyd, B. B., Chapel Hill Univ. of N. C., 1909	1909	1914
Long, D. T., Hurdle Mills	....	1919
Lyon, E. H., Bahama Univ. of Md., 1904	1904	1912
MacNider, Wm. DeB., Chapel Hill Univ. of N. C., 1902	1902	1903
McPherson, S. D., Durham Univ. of Md., 1903	1903	1912
Mangum, C. S., Chapel Hill Jeff. Med. Coll., 1894	1896	1898
Manning, John Moore, Durham Bellevue Med. Coll., 1897	1897	1901
Manning, I. H., Chapel Hill Long Island, N. Y., 1897	1899	1901
Nichols, Rhodes E., Durham Va. Med. Coll., Richmond	1890	1904
Olive, Wm. Wade, Durham Univ. of Md., 1906	1907	1909
Ray, Hickman, Durham Univ. of Md., 1915	1915	1920
Robertson, Mike, Durham Med. Coll. of Va., 1912	1912	1913
Ross, Geo. H., Durham Univ. of Tenn., 1899	1904	1904
Sterrett, J. R., West Durham Univ. Coll. of Med., Va., 1908	1913	1916
Sweaney, H. M., Durham Univ. of Pa., 1919	1919	1920
Sweaney, John, West Durham P. & S., Balt., 1886	1888	1916
Watkins, G. T., Durham Jeff. Med. Coll., 1915	1915	1917

EDGECOMBE COUNTY SOCIETY

President	. . .	....
Secretary, C. L. Outland, Tarboro	....	1920
Baker, Julian Meridith, (Hon.), Tarboro Univ. of Md., 1879	1897	1897
Barber, Y. M., Macclesfield	....	1918
Bass, Spencer P., Tarboro Univ. of Va., 1906	1907	1909
Green, Wm. W., Jr., Tarboro Univ. of N. C., 1908	1908	1910
Harrell, Samuel N., Tarboro Univ. of Md, 1897	1897	1904
Jones, E. E., Elm City	....	1920
Norfleet, L. E., Tarboro	....	1920

Name and Address	*Licensed*	*Joined State Society*
Raby, J. G., Tarboro, R. F. D. Univ. Coll. of Med., Va., 1911	1911	1912
Royster, Thomas H., Tarboro Univ. of Md., Richmond, 1908	1908	1914
Speight, R. H., Sr., (Hon.), Whitakers Univ. of Md., 1870	1895	1895
Staton, Lycurgus, L., Tarboro Univ. of N. Y., 1870	1870	1900
Thigpen, Wm. J., Tarboro Jeff. Med. Coll., Phila., 1900	1900	1907
Williams, T. G., Conetoe Med. Coll. of Va., 1909	1910	1916
Wooten, Amos Monroe, Pinetops Univ. of N. C., 1910	1910	1911

FORSYTH COUNTY SOCIETY

President, S. Douglas Craig, Winston-Salem Tulane Univ., 1908	1908	1912
Secretary, Vann McKee Long, Winston-Salem N. C. Med. Coll., 1906	1906	1911
Belton, J. F., Winston-Salem Univ. of Pa., 1914	1914	1916
Benbow, J. T., Winston-Salem N. C. Med. Coll., 1910	1910	1920
Bowers, M. A., Winston-Salem Tulane Univ., 1911	1911	1914
Bulla, A. C., Winston-Salem N. C. Med. Coll., Charlotte, 1915	1915	1918
Bynum, John, Winston-Salem Univ. of N. Y., 1892	1892	1896
Bynum, Wade H., Germantown Univ. Coll. of Med., Va., 1900	1900	1900
Carlton, Romulus L., Winston-Salem Univ. of Md., 1906	1906	1908
Cooke, G. C., Winston-Salem Univ. of Md., 1918	1919	1920
Dalton, David N., (Hon.), Winston-Salem Univ. of N. Y., 1881	1885	1885
Dalton, Wm. N., Winston-Salem N. C. Med. Coll., 1904	1904	1905
Daugherty, J. E., Winston-Salem Barnes Med. Coll., 1910	1910	1920
Davis, J. M., Winston-Salem Columbia Univ., 1913	1913	1920
Davis, Thomas W., Winston-Salem S. C. Med. Coll., 1898	1900	1900
Dowdy, J. Ernest, Wniston-Salem Univ. of Md., 1910	1909	1910
Edwards, Albert D., Winston-Salem Univ. of Md., 1903	1904	1905
Fearrington, Joseph Payton, Winston-Salem Univ. of Md., 1887	1887	1904
Flynt, S. S., Rural Hall P. & S., Balt., 1889	1890	1907
Gray, Eugene Price, Winston-Salem Johns Hopkins Med. School, 1906	1907	1909
Grimes, W. L., Winston-Salem Johns Hopkins Univ., 1910	1910	1915
Hammock, J. C., Walkertown P. & S., Balt., 1889	1890	1908

Name and Address	*Licensed*	*Joined State Society*
Hanes, F. M., Winston-Salem Johns Hopkins, 1908	1908	1917
Hege, J. Roy, Clemmons Univ. of Md., 1916	1916	1920
Hurdle, S. W., Winston-Salem Jeff. Med. Coll., 1914	1915	1916
Izlar, H. L., Winston-Salem N. C. Med. Coll., 1915	1916	1916
Jennings, R. G., Winston-Salem N. C. Med. Coll., 1913	1913	1920
Johnson, Wingate M., Winston-Salem Jeff. Med. Coll., 1908	1908	1911
Johnston, W. W., Winston-Salem N. C. Med. Coll., 1913	1913	1920
Kapp, Henry Herman, Winston-Salem Jeff. Med. Coll., Phila., 1901	1901	1904
Keiger, O. R., Winston-Salem Univ. Coll. of Med., Richmond, Va., 1911	1911	1914
Kerr. James Edwin, Winsotn-Salem Univ. of Md., 1897	1898	1898
Lawrence, Charles S., Winston-Salem George Washington Univ., 1908	1908	1911
Leak, W. G., East Bend	....	1920
Linville, Aaron Y., Winston-Salem Univ. of N. Y., 1889	1889	1896
Lockett, Everett A., Winston-Salem Univ. of Pa., 1902	1903	1904
Mimms, C. W., Winston-Salem Vanderbilt Univ.; Univ. of Louisville, Ky., 1914	1916	1917
Moore, R. A., Winston-Salem N. C. Med. Coll., Charlotte, 1911	1911	1917
Pepper, John Kerr., Winston-Salem P. & S., Balt., 1907	1908	1908
Perkins, J. R., Winston-Salem Med. Coll. of Va., 1904	1904	1917
Pfohl, Samuel F., Winston-Salem Univ. of Pa., 1894	1898	1898
Rosseau, J. P., Winston-Salem Univ. of Md., 1918	1919	1920
Salmons, L. R., Winston-Salem N. C. Med. Coll., 1912	1912	1916
Schallert, P. O., Winston-Salem Univ. of Ill., Dept. Med., 1904	1904	1912
Schaub, O. P., Winston-Salem Balt. Med. Coll., 1898	1898	1898
Slate, John S., Winston-Salem Univ. Coll. of Med., Richmond, Va., 1900	1899	1920
Spainhour, Ellis H., Winston-Salem Balt. Med. Coll., 1898	1898	1898
Spencer, Wm. O., Winston-Salem Jeff. Med. Coll., Phila., 1891	1891	1894
Strickland, Edward F., Bethania Univ. of N. Y., 1887	1887	1893
Summers, Charles L., Baltimore, Md. Univ. of Md.; Coll. of P. & S., 1887	1891	1896
Thames, John, Little Rock, Ark. Louisville Med. Coll., 1894	1894	1917
Valk, A. DeT., Winston-Salem Johns Hopkins Med. School, 1910	1907	1914
Wall, R. L., Winston-Salem Jeff. Med. Coll., Phila., 1906	1907	1914

Name and Address	*Licensed*	*Joined State Society*
Whittington, James B., Winston-Salem N. C. Med. Coll., 1911	1911	1913
Wiggins, John C., Winston-Salem Univ. of Pa., School of Med., Phila., 1910	1910	1912
Wyatt, Wortham, Winston-Salem Univ. of Pa., 1913	1913	1916

FRANKLIN COUNTY SOCIETY

President, R. B. Henderson, Franklinton Univ. of Md., 1887	1887	1904
Secretary, S. P. Burt, Louisburg Coll. of P. & S., Balt., 1896	1896	1904
Beam, H. M., Wood Columbia Univ., N. Y., 1918	1918	1919
Harris, John H., Franklinton Bellevue Med. Coll., 1886	1886	1904
Johnson, B. C., Bunn Univ. of N. C., 1909	1910	1910
Johnson, Henry H., Louisburg Coll. of P. & S., Balt., 1915	1918	1919
Malone, James E., Louisburg Bellevue Med. Coll., 1875	1885	1904
Newell, H. A., Henderson P. & S., Balt., 1906	1906	1907
Newell, J. O., Louisburg P. & S., Balt., 1912	1910	1912
Perry, H. G., Louisburg Coll. of P. &. S., Balt., 1915	1915	1916
Simpson, W. P., Louisburg Univ. of Va., 1903	1904	1920
Timberlake, Richard E., Youngsville Jeff. Med. Coll., 1908	1908	1910

GASTON COUNTY SOCIETY

President, R. C. Miller, Mayworth N. C. Med. Coll., 1909	1918	1919
Secretary, Charles H. Pugh, Gastonia N. C. Med. Coll., 1910	1910	1913
Adams, Charles E., Gastonia Univ. of Md., 1878	1885	1904
Anders, McT. G., Gastonia Med. Coll. of Va., 1901	1902	1904
Anderson, James A., Gastonia Univ. of Ga., 1899	1909	1909
Anthony, J. E., Kings Mountain Univ. of Tenn., 1911	1911	1911
Boyles, M. F., Dallas	....	1920
Campbell, J. W., Gastonia	....	1920
Clinton, Roland, Gastonia	....	1920
Davis, W. W., Belmont Ky. School of Med., 1885	1885	1904
Eddleman, Hall M., Gastonia Ky. School of Med., 1886	1886	1904
Garrison, D. A., Gastonia Louisville Med. Coll., 1896	1896	1900
Glenn, Henry F., Gastonia P. & S., Atlanta, 1900	1897	1904
Glenn, Lucius N., Gastonia Univ. of Md., 1897	1897	1904

Name and Address	*Licensed*	*Joined State Society*
Hall, Price B., Belmont Univ. of N. C., 1903	1903	1911
Hood, J. Sidney, Kings Mountain Jeff. Med. Coll., 1907	1907	1910
Houser, W. H., Cherryville	....	1904
Hunter, W. B., Gastonia	....	1920
Jenkins, J. H., Gastonia Ky. School of Med., Louisville, 1887	1888	1904
Johnson, Lee, Gastonia	....	1918
Lyday, C. E., Gastonia	....	1920
McAdams, C. R., Belmont N. C. Med. Coll., 1912	1912	1916
McCombs, C. J., Gastonia N. C. Med. Coll., 1905	1905	1908
McCoy, Thomas M., Mt. Holly N. C. Med. Coll., 1905	1906	1910
McLean, Charles E., Gastonia	....	1905
Patrick, Geo. R., Bessemer City	....	1904
Patrick, L. N., Gastonia	1910	1913
Pressley, J. M., Belmont	....	1920
Quickel, Thomas C., Gastonia Tulane Univ., 1900	1899	1904
Reid, James W., Lowell Jeff. Med. Coll., Phila., 1909	1909	1910
Rhyne, Robert Edgar, Gastonia N. C. Med. Coll., 1907	1907	1908
Robinson, Frank, Lowell N. C. Med. Coll., 1878	1878	1904
Sloan, James M., Gastonia Louisville Med. Coll., 1891	1891	1904
Wilkins, Samuel A., Dallas Univ. of Ky., 1902	1903	1903
Wilson, Frank G., Gastonia Univ. of Md., 1896	1896	1899

GATES COUNTY SOCIETY

(No members in good standing)

GRAHAM COUNTY SOCIETY

(No members in good standing)

GRANVILLE COUNTY SOCIETY

President, Joseph A. Morris, Oxford, R. F. D. Vanderbilt Univ., 1890	1893	1899
Secretary, W. B. Bullock, Oxford Bellevue Med. Coll., 1892	1892	1893
Booth, Samuel D., (Hon.), Oxford Med. Coll. of Va., 1867	1885	1885
Booth, Thomas L., Oxford Med. Coll. of S. C., 1883	1885	1893
Canady, Sam. H., Oxford Univ. of Va., 1887	1895	1904
Daniel, N. C., Oxford N. C. Med. Coll., 1895	1895	1902
Hardee, Parrott R., Stem P. & S., Balt., 1885	1885	1906
Hays, B. K., Oxford Univ. Coll. of Med., Va., 1894	1894	1897
Meadows, Elijah B., Oxford, R. F. D. Univ. Coll. of Med., Va., 1901	1901	1901

Name and Address	*Licensed*	*Joined State Society*
Sanderford, J. F., Raleigh P. & S., Balt., 1890	1890	1891
Sikes, G. T., (Hon.), Grissom Univ. of Md., 1883	1884	1884
Taylor, Wm. L., Stovall Med. Coll. of Va., 1900	1900	1901
Thomas, Wm. N., Oxford Med. Coll. of Va., 1911	1911	1914
Thompson, Joseph, Creedmore Ky. Univ., Louisville, 1904	1908	1912
Watkins, Geo. S., Oxford Univ. Coll. of Med., Va., 1900	1900	1908
GREEN COUNTY SOCIETY		
President, John L. Carroll, Hookerton Louisville Med. Coll., 1905	1905	1909
Secretary, J. H. Harper, Snow Hill Jeff. Med. Coll., Phila., 1905	1906	1907
Edwards, G. C., (Hon.), Hookerton Bellevue Med. Coll., 1883	1883	1883
Murphy, W. B., Snow Hill Univ. Coll. of Med., Va., 1903	1903	1905
Thigpen, F. L., Hookerton Jeff. Med. Coll., 1917	1917	1919
Whittington, Wm. W., Snow Hill Louisville Med. Coll., 1895	1895	1902
GUILFORD COUNTY SOCIETY		
President, Charles W. Banner, Greensboro Univ. of Md., 1899	1899	1901
Secretary, F. J. Pate, Greensboro Univ. of Md.; Coll. of P. & S., Balt., 1908	1908	1915
Ashworth, W. C., Greensboro P. & S., Balt., 1892	1892	1904
Austin, J. W., High Point Jeff. Med. Coll., Phila., 1910	1910	1913
Aydlette, H. T., Greensboro Univ. of Va., 1894	1895	1907
Battle, John T. J., (Hon.), Greensboro P. & S., Balt., 1884	1884	1890
Beall, Wm. P., (Hon.), Greensboro Jeff. Med. Coll., 1879	1879	1879
Best, B. W., Greensboro	....	1920
Berry, John, Greensboro	....	1920
Boyles, J. H., Greensboro P. & S., Balt., 1903	1903	1904
Braddy, Wade Hampton, Graham Univ. of N. C., 1909	1909	1913
Bowman, H. P., Greensboro Univ of Tenn., 1894	1894	1905
Burrus, John T., High Point Balt. Med. Coll., 1901	1898	1898
Coe, Samuel S., High Point Univ. Coll. of Med., Va., 1911	1912	1913
Cole, Walter F., Greensboro Johns Hopkins, 1909	1909	1910
Dees, Ralph Erastus, Greensboro Univ. of Md., 1906	1908	1909
Dees, Rigdon O., Greensboro Univ. of Md., 1906	1906	1908
Dick, Julian Vance, Gibsonville Univ. of N. C., 1907	1907	1908

Name and Address	*Licensed*	*Joined State Society*
Dodson, H. H., (Hon.), Greensboro Med. Coll. of Va., 1882	1885	1887
Fortune, Alex. F., Greensboro Univ. Coll. of Med., Va., 1900	1900	1904
Fox, M. F., (Hon.), Guilford College P. & S., Balt., 1881	1885	1885
Gilmer, Charles S., Greensboro, R. No. 6 Univ. of N. Y., 1891	1891	1894
Glascock, J. H., Greensboro	....	1907
Gove, Anna M., Greensboro Woman's Med. Coll., N. Y., 1892	1894	1896
Grayson, C. S., High Point George Washington Univ., 1906	1907	1908
Harrison, Edmund, Greensboro Univ. of Md., 1896	1894	1904
Hilton, J. J., Greensboro Univ of Md., 1886	1889	1904
Hiatt, H. B., High Point Univ. of Md., 1907	1907	1910
Holt, Wm. T., McLeansville Univ. of Tenn., 1890	1890	1896
Hyatt, Fred C., Greensboro Jeff. Med. Coll., Phila., 1907	1907	1912
Jackson, Walter Leo, High Point N. C. Med. Coll., 1912	1912	1913
Jarboe, Parron, Greensboro Georgetown Univ., 1905	1906	1907
Jones, W. M., Jr., Greensboro Univ. of Md., 1903	1903	1903
Knight, Wm. P., Greensboro Balt. Med. Coll., 1898	1898	1898
Long, John Wesley, (Hon.), Greensboro Vanderbilt Univ., 1884	1884	1884
Lyon, B. R.	....	1920
McAnally, Wm. J., High Point Balt. Med. Coll., 1897	1896	1899
McCain, Hugh W., High Point Jeff. Med. Coll., Phila., 1909	1909	1911
Mann, I. T., High Point Jeff. Med. Coll., Phila., 1912	1912	1915
Meadows, W. J., Greensboro Med. Coll of Alabama, 1894	1889	1904
Michaux, Edward R., Greensboro Univ. of N. Y., 1889	1889	1904
Miles, May S., Greensboro Laura Mem. Woman's Coll. of Med., Cinn., Ohio, 1898	1904	1905
Moore, Charles E., Greensboro Jeff. Med. Col., Phila., 1907	1909	1910
Moseley, Charles W., Greensboro Balt. Med. Coll., 1893	1893	1896
Norman, Geo. W., Pomona Balt. Med. Coll., 1896	1896	1904
Ogburn, H. H., Greensboro Johns Hopkins Univ., 1913	1913	1914
Reaves, C. R., Greensboro Univ. of the South, 1906	1914	1914
Reaves, Robert G., Greensboro	....	1920
Reaves, W. P., Greensboro Univ. of the South, 1903	1905	1907

Name and Address	*Licensed*	*Joined State Society*
Reitzel, Claude E., High Point	1902	1902
P. & S., Atlanta, 1902		
Richardson, W. J., Greensboro	1891	1893
Louisville Med. Coll., 1891		
Rieves, J. T., Greensboro	1891	1893
Louis. Med. Coll., 1891		
Roberson, Charles, Greensboro	1897	1901
Long Island Coll. Hosp., 1897		
Roberson, Geo. B., Greensboro	1915	1917
Med. Coll. of S. C., 1915		
Schoonover, R. A., Greensboro	1906	1912
Univ. of Md., 1905		
Sharpe, F. A., Greensboro	....	1920
Shugart, F. C., High Point	....	1920
Simmons, L. L., Greensboro	1919	1919
Univ. of Tenn., 1883; Vanderbilt Univ., 1899; Tulane Univ., 1917		
Smith, Alick T., Greensboro	1910	1913
Med. Coll. of Va., 1908		
Smith, Owen, High Point	1905	1917
Jeff Med. Coll. of Phila., 1904		
Spoon, A. O., Denim	1908	1910
N. C. Med. Coll., 1908		
Spoon, S. C., Greensboro	....	1920
Stanton, D. A., High Point	1887	1891
Vanderbilt Univ., 1887		
Starr, H. F., Greensboro	1916	1917
Jeff. Med. Coll., 1916		
Stockard, J. K., Greensboro	1906	1907
Tankersley, J. W., Greensboro	1906	1907
Jeff. Med. Coll., 1906		
Taylor, F. R., High Point	1913	1915
Univ. of Pa., 1913		
Thomas, J. G., Greensboro	....	1920
Turner, J. P., Greensboro	1897	1904
Univ. of Md., 1896		
Walker, J. B., Gibsonville	1914	1916
Med. Coll. of Va., 1914		
Whitaker, A. C., Julian	1903	1908
Univ. of Tenn., 1903		
Williams, B. B., Greensboro	1886	1893
Univ. of Md., 1886		
Williams, John A., Greensboro	1898	1898
Univ. of Va., 1888		
Williams, John D., Guilford Station	1898	1898
Vanderbilt Univ., 1898		
Wilson, Albert R., (Hon.), Greensboro	1882	1882
Jeff. Med. Coll., Phila., 1882		
Wilson, Newton G., Summerfield	1914	1915
N. C. Med. Coll., 1915		
Wolf, H. C.	....	1920
Wolff, D. R.	....	1920
Woodruff, Fred G., High Point	1919	1919
Med. Coll. of Va., 1917		

HALIFAX COUNTY SOCIETY

President, Aristides S. Harrison, Enfield	1888	1890
Univ. of Md., 1888		
Secretary, Paul C. Carter, Weldon	....	1920
Univ. of Md., 1916		

Name and Address	*Licensed*	*Joined State Society*
Beckwith, R. P., Rosemary	1913	1916
Univ. of Pa., 1911		
Clark, H. I., Scotland Neck	....	1920
Furgerson, Henry B., Halifax	1882	1904
Jeff. Med. Coll., 1882		
Flemming, W. D., Enfield	1910	1916
Univ. of N. C., 1910		
Fryar, C. H., Scotland Neck	....	1920
Jeff. Med. Coll., 1918		
Jarmon, F. G., Roanoke Rapids	1914	1916
Univ. Coll. of Med., Va., 1911		
Justice, L. H., Littleton	....	1920
Med. Coll. of Va., 1916		
Lassiter, H. G., Weldon	....	1920
Jeff. Med. Coll., 1918		
Lassiter, Kenelm, (Hon.), Hobgood	1885	1885
Ky. School of Med., 1884		
Leggett, V. W., Hobgood	1916	1920
Univ. of Louisville, 1913		
Long, T. W. M., Roanoke Rapids	1909	1900
Univ. Coll. of Med., Va., 1908		
McRae, Neal, Littleton	....	1920
Martin, J. W., Roanoke Rapids	....	1920
Med. Coll. of Va., 1916		
Nicholson, B. M., Ringwood	1910	1913
Univ. Coll. of Med., Va., 1910		
Palmer, Horace, Hollister	....	1920
Parker, F. M., Enfield	....	....
Patchin, D. F., Rosemary	....	1917
Univ. & Bellvue Hosp.; Med. Coll., N. Y., 1913		
Picot, L. J., (Hon.), Littleton	1875	1875
Jeff. Med. Coll., 1895		
Pierce. S. B., Weldon	1897	19056
Bellevue Hosp. M. C., N. Y., 1897		
Putney, W. R., Littleton	....	1920
Smith, O. F., Scotland Neck	....	1920
Univ. Coll. of Va., 1899		
Suiter, W. G., Weldon	....	1920
Med. Coll. of Va., 1918		
Thigpen, H. G., Scotlanl Neck	....	1920
Jeff. Med. Coll., 1917		
Whitaker, F. C. Enfield	1911	1919
Md. Med. Coll., 1911		
Zollicoffer, Augustus R., Weldon	1885	1890
Univ. of Pa., 1875		
Zollicoffer, D. B., Weldon	....	1904
HARNETT COUNTY SOCIETY		
President	....	....
Secretary, R. C. Tatum, Duke	....	1920
Arnold, Laurie J., Lillington	1905	1907
N. C. Med. Coll., 1905		
Bryant, M. L., Godwin	....	1920
Coltrane, Wallace E., Dunn	1913	1917
Med. Coll. of Va., Richmond, 1912		
Halford, Jos. W., Lillington	1905	1905
Columbia Univ., 1904		
Hicks, Isham Faison, Dunn	1902	1904
N. C. Med. Coll., 1902		
Highsmith, Charles Dunn	1898	1898
Balt. Med. Coll. Phila., 1895		

Name and Address	*Licensed*	*Joined State Society*
Holt, D. W., Duke	....	1920
Holt, Wm. P., Duke	1895	1901
Jeff. Med. Coll., Phila., 1895		
McKay, Joseph F., Buies Creek	1885	1904
S. C. Med. Coll., 1884		
McLean, John W., Godwin	1920	1906
N. C. Med. Coll., 1902		
Melvin, Wayman C., Duke, R. No.2	1900	1905
Univ. Coll. of Med., Va., 1900		
Petree, P. A., Dunn	....	1920
Roberts, H. C., Coats	1912	1913
Tulane Univ., 1912		
Sexton, C. Hector, Dunn	1890	1904
Univ. of Md., 1890		
Warren, R. L., Dunn	1911	1912
Tulane Univ., 1911		

HAYWOOD COUNTY SOCIETY

President	....	....
Secretary, Rufus L. Allen, Waynesville	1885	1889
Univ. of Md., 1885		
Abel, J. F., Waynesville	1893	1899
Univ. of Balt., 1892		
Davis, F. M., Canton	1894	1904
Vanderbilt Univ., 1894		
Johnson, W. C., Canton	1912	1917
Tulane Univ. of Louisiana, 1912		
McCracken, J. R., Waynesville	1902	1903
N. C. Med. Coll., Charlotte, 1902		
Montgomery, K. E., Waynesville	....	1920
Univ. of Louisville, Ky., 1917		
Russell, Jesse M., Canton	1911	1912
Univ. of Nashville, 1911		
Stringfield, Samuel L., Sunburst	1905	1907
Jeff. Med. Coll., Phila., 1905		
Stringfield, Thomas, Waynesville	1898	1899
Vanderbilt Univ., 1898		
Way, J. Howell, (Hon.), Waynesville	1885	1887
Vanderbilt Univ., 1886		
Wilson, J. E., Canton, R. F. D.	1885	1903
Louisville Med. Coll., 1876		

HENDERSON-POLK COUNTY SOCIETY

President, Guy E. Dixon, Hendersonville	1903	1903
P. & S., St. Louis, 1903		
Secretary, R. S. Sample, Hendersonville	1915	1919
Univ. of Pa., 1915		
Brown, J. S., Hendersonville	1894	1895
Northwestern Univ., 1893		
Cliff, B. F., Hendersonville	1914	1915
George Washington Univ., 1908		
Drafts, Andrew B., Hendersonville	1899	1903
Univ. of Va., 1896		
Edgerton, Jas. L., (Hon.), Hendersonville	1885	1890
Univ. of Md., 1877		
Grady, Wm. E., Tryon	1895	1899
Univ. of Md. and Coll. of P. & S., Balt., 1894		
Greenwood, S. E., Fletcher	1903	1904
Tenn. Med. Coll., 1902		

Name and Address	*Licensed*	*Joined State Society*
Howe, Wm. B. White, Jr., Henlersonville Med. Coll. of S. C., 1906	1907	1908
Kirk, W. R., Hendersonville Central Univ. of Ky., 1890	1901	1903
Morse, Lucius B., Hendersonville Chicago Homeopathic Coll., 1897	1901	1911
Palmer, Martin C., Tryon Med. Coll. of S. C., 1910	1911	1914
Salley, E. McQueen, Saluda Univ. of Md., 1905	1905	1908
Sumner, R. D., Rock Hill, S. C. Med. Surg. Coll., Phila., 1915	1915	1920
Sumner, Thomas W., Fletcher Jeff. Med. Coll., Phila., 1910	1910	1911

HERTFORD COUNTY SOCIETY

President, R. H. Gary, Murfreesboro Med. Coll. P. & S., 1881	1885	1904
Secretary, W. B. Pollard, Winton Univ. of Pa., 1899	1903	1905
Burbage, Thomas I., Como Memphis Hosp. Med. Coll., 1883	1885	1890
Futrell, L. M., Murfreesboro Va. Med. Coll., 1914	1914	1918
Green, Arthur W., Ahoskie Univ. Coll. of Med., Richmond, 1904	1904	1905
Harrell, Geo. N., Murfreesboro Univ. Coll. of Med., Richmond, 1907	1907	1909
Mitchell, Jesse H., Ahoskie Univ. of Balt., 1879	1885	1904
Mitchell, Paul H., Ahoskie Univ. Coll. of Med., Richmond, 1907	1907	1908
Powell, Jesse A., Harrellsville Coll. of P. & S., Balt., 1907	1908	1909
Walker, L. W., Ahoskie Univ. of Md., 1911	1911	1917

HOKE COUNTY SOCIETY

President, R. A. McBrayer, Sanatorium Univ. of Pa., 1916	1916	1917
Secretary, L. B. McBrayer, Sanatorium Univ. of Md.; Coll. of P. & S., Balt., 1891	1891	1899
Blair, A. McNeil, Southern Pines Univ. of N. Y., 1897	1905	1906
Brown, G. W., Raeford Ky. School of Med., Louisville, 1898	1900	1900
Dickson, A. P., Raeford Univ. of N. Y., 1878	....	1904
Graham, Geo. A., Raeford Univ. of N. Y., 1876	1885	1904
Juat, Francis, Raeford Univ. of Berne, 1886	1910	1910
McCain, P. P., Sanatorium Univ. of Md.; Coll. of P. & S., Balt., 1911	1914	1917
Rosser, R. G., Vass N. C. Med. Coll., Charlotte, 1909	1909	1917
Wilkins, R. B., Raeford N. C. Med. Coll., 1915	1913	1915

HYDE COUNTY SOCIETY

Name and Address	Licensed	Joined State Society
President	....	....
Secretary,	....	....
Harris, Arthur Graham, Fairfield Univ. of the South, 1905	1907	1908

IREDELL-ALEXANDER COUNTY SOCIETY

President, A. E. Bell, Mooresville Univ. of Md. and Coll. of P. & S., 1897	1897	1904
Secretary, J. E. McLaughlin, Statesville Univ. of Md., 1886	1886	1900
Adams, M. R., (Hon.), Statesville Univ. of Md., 1878	1884	1884
Anderson, Thos. Eli, (Hon.), Statesville Jeff. Med. Coll., Phila., 1878	1878	1879
Carpenter, F. A., Statesville N. C. Med. Coll., 1906	1906	1906
Crouch, T. D., Statesville N. C. Med. Coll., 1909	1909	1915
Crowson, Samuel T., Taylorsville Univ. of Tenn., Memphis, 1904	1907	1917
Davis, Jas. W., Statesville Univ. of Pa., 1913	1913	1915
Easley, P. S., Statesville N. C. Med. Coll., Charlotte; Jeff. Med. Coll., Phila., 1908	1907	1913
Gilmore, W. D., Mooresville Univ. of N. C., 1903	1903	1904
Goode, T. V., Statesville Univ. Coll. of Med., Va., 1912	1912	1916
Jurney, Peter Clayton, Turnersburg Med. Coll. of Va., 1901	1901	1904
Little, E. E., Statesville N. C. Med. Coll., 1912	1912	1915
Long, H. F., Statesville Univ. of Md., 1892	1892	1893
McElwee, Ross S., Statesville	....	1910
Rhyne, S. A., Mooresville	....	1920
Sharpe, Frank L., Statesville Univ. of N. C., 1905	1904	1905
Sherrill, C. L., Statesville N. C. Med. Coll., 1914	1914	1915
Tally, J. S., Troutman Univ. of N. C., 1909	1910	1917
Taylor, G. W., Mooresville N. C. Med. Coll., Charlotte, 1906	1906	1917
Wilson, W. E., Mooresville	....	1920

JACKSON COUNTY SOCIETY

President, Charlse Z. Candler, Sylva P. & S., Atlanta, 1901	1901	1904
Secretary, D. D. Hooper, Sylva Univ. Coll. of Med., Va., 1905	1905	1904
Bryson, E. J., Cullowhee Bennett, Chicago, Ill., 1913	1914	1915
Nichols, Asbury S., Sylva Lincoln Mem. Univ., Med. Dept., Knoxville, 1905	1907	1913
Wilkes, Grover, C., Sylva	....	1920

Name and Address	*Licensed*	*Joined State Society*
President, G. S. Coleman, Kenly Med. Coll. of Va., 1907	1907	1909
Secretary, Thel Hooks, Smithfield Med. Coll. of Va., 1901	1901	1903
Bynum, C. M., Princeton	....	1918
Grady, Jas. C., Kenly P. & S., Balt., 1887	1887	1890
Griffin, J. A., (Hon.), Clayton P. & S., Balt., 1881	....	1890
Hocutt, Battle A., Clayton Univ. of N. C. School of Med., 1906	1906	1908
McLemore, Geo. A., Clayton, R. F. D. Univ. of N. C., 1900	1906	1908
Martin, J. F., Benson N. C. Med. Coll., 1905	1905	1918
Mayerberg, I. W., Selma Jeff. Med. Coll., Phila., 1906	1906	1909
Noble, R. J., Benson Ky. School of Med., 1875	1878	1878
Oliver, A. S., Benson Jeff. Med. Coll., 1914	1914	1919
Parker, G. E., Benson Coll. of P. & S., Balt., 1886	1888	1904
Person, J. B., Jr., Selma Med. Coll. of Balt., 1897	1897	1900
Rose, A. H., Smithfield Univ. of N. C., 1906	1906	1907
Stanley, John H., Four Oaks Univ. of N. C., 1914	1904	1906
Surles, J. B., Four Oaks Jeff. Med. Coll., 1909	1909	1919
Utley, H. H., Benson Jeff. Med. Coll., 1901	1901	1901
Vick, Geo. D., Selma Jeff. Med. Coll., 1906	1906	1907
Wharton, L. D., Smithfield Tulane Univ., 1893	1893	1894
Woodard, A. G., Princeton N. C. Med. Coll., 1907	1907	1909
Woodard, G. B., Kenly Med. Coll. of Va., 1915	1915	1915
Young, J. J., Clayton P. & S., Balt., 1897	1896	1904

JONES COUNTY SOCIETY

(No members in good standing)

LEE COUNTY SOCIETY

President, Charles L. Scott, Sanford Univ. of Md., 1897	1899	1916
Secretary, Lynn McIver, Sanford Univ. of N. C., 1901	1902	1902
McIver, E. M., Jonesboro Univ. of N. C., 1908	1908	1911
Matthews, M. L., Sanford Univ. of N. C., 1903	1903	1904
Monroe, J. P., Sanford P. & S., Balt., 1901	1901	1905

Name and Address	*Licensed*	*Joined State Society*
Monroe, W. A., (Hon.), Sanford Univ. of Md., 1886	1886	1890
Snipes, E. P., Jonesboro Vanderbilt Univ., 1890	1890	1890
Watson, Leon, Broadway N. C. Med. Coll., 1900	1900	1904

LENOIR COUNTY SOCIETY

President, Ira M. Hardy, Kinston Med. Coll. of Va., 1901	1902	1902
Secretary, George E. Kornegay, Kinston	1913	1915
Carpening, O. J., Granite Falls	....	1920
Carr, M. L., Kinston	....	1920
Denny, Wm., W., (Hon.), Pink Hill	....	....
Hargrove, W. F., Kinston Univ. of Md., 1901	1901	1900
McNairy, C. Banks, Kinston P. & S., Balt., 1893	1893	1905
Mangum, C. P., Kinston	....	1920
Monk, H. D., Trenton Med. Coll. of Va., 1896	1896	1904
Moseley, Z. V., Kinston Univ. Coll. of Med., 1913	1913	1914
Parrott, Albert DeK., Kinston Univ. Coll. of Med., Va., 1906	1906	1908
Parrott, James M., Kinsotn Tulane Univ., 1895	1895	1896
Parrott, M. C., Kinston Tulane Univ., 1917	1917	1919
Parrott, Wm. T., Kinston Tulane Univ., 1895	1895	1901
Perry, Vance P., Kinston Med. Coll. of Va., 1916	1916	1917
Tull, Henry (Hon.), Kinston	1876	1876
West, C. F., Kinston	....	1920
Weyher, V. E., Kinston	....	1919
Whitaker, Frederick A., Kinston Univ. of Pa., 1875	1871	1907
Whitaker, Frederick S., Kinston Balt. Med. Coll, 1913	1913	1914
Whitaker, R. A., (Hon.), Kinston P. & S., Balt., 1885	1885	1885
Wickliffe, T. F., Troy, Alabama Univ. of Pa., 1876	....	1919

LINCOLN COUNTY SOCIETY

President, Horace N. Abernathy, Denver Louisville Med. Coll., 1894	1894	1899
Secretary, W. F. Elliott, Lincolnton Medico-Chir. Coll., 1892	1916	1917
Crowell, L. A., Lincolnton Balt. Med. Coll., 1892	1892	1898
Edwards, F. D., Lawndale, R. No. 1 Atlanta Med. Coll., 1914	1916	1919
Gamble, J. F., Lincolnton Univ. of Tenn., 1903	1915	1919
Gamble, J. R., Lincolnton Univ. of Nashville, Tenn., 1911	1911	1912
Hoover, C. H., Crouse Balt. Med. Coll., 1903	1903	1903

Name and Address	*Licensed*	*Joined State Society*
Jacocks, W. P., 61 Broadway, New York	....	1913
Killian, R. B., Lincolnton	1885	1904
Louisville, Med. Coll., 1885		
Kiser, W. C., Reepsville	1889	1904
Southern Med. Coll., Ga., 1889		
Lee, R. E., Lincolnton	1896	1918
Univ. of Md., 1896		
Saine, J. W., Lincolnton	1891	1904
Louisville Med. Coll., 1891		
Shellum, O. W., Lincolnton	1909	1913
N. C. Med. Coll., 1909		
Taylor, Frank V., Stanley	1915	1919
N. C. Med. Coll., 1915		
Thompson, C. D., Lincolnton	1901	1904
Univ. of Tenn., 1901		
Wise, J. S., Lincolnton	1899	1904
Ky. School of Med., 1890		

McDOWELL COUNTY SOCIETY

President, John F. Jonas, Marion	1903	1903
P. & S., Balt., 1893		
Secretary, John B. Johnson, Old Fort	1914	1914
Univ. of Louisville, Med. Dept., 1905		
Ashworth, B. L., Marion	1893	1900
P. & S., Balt., 1893		
Justice, G. B., Marion	1907	1909
P. & S., Atlanta, 1906		
Kirby, Guy S., Marion	1896	1903
Univ. Coll. of Med., Va., 1897		
McIntosh, D. M., Old Fort	1907	1909
Med. Coll. of Va., 1904		
President, S. H. Lyle, Franklin	1881	1882
Univ. of Nashville, 1883		
Secretary, W. A. Rogers, Franklin	1898	1898
Univ. of Nashville, 1898		
Killian, P. H., Hayesville	1909	1909
Atlanta Coll. of P. & S., 1900		
Fouts, J. H., Franklin	1895	1918
Vanderbilt Univ., 1895		
Horsley, H. T., Franklin	1915	1918
Balt. Med. Coll., 1907		
Siler, Fred L., Franklin	1898	1903
Univ. of Nashville, 1897		

MADISON COUNTY SOCIETY

President, Willard F. Robinson, Mars Hill	1903	1904
Vanderbilt Univ., 1896		
Secretary, Frank Roberts, Marshall	1892	1902
Jeff. Med. Coll., Phila., 1892		
Baird, John H., Marshall	1885	1885
Baird, John W., Mars Hill	1908	1909
Lincoln Mem. Univ., Knoxville, 1901		
Burnett, Isaac E., Big Laurel	1905	1904
Lincoln Mem. Univ., Knoxville, 1901		
Frisbee, J. T., Spring Hope	....	1904
Moore, Joseph N., Marshall	1905	1909
Univ. of N. C., 1905		
Packarl, G. H., White Rock	1915	1915
P. & S., Balt., 1898		

Name and Address	*Licensed*	*Joined State Society*
Peck, Edward J., Hot Springs Vanderbilt Univ., 1879; Univ. of Tenn., 1880	....	1903
Sams, W. A., Marshall Lincoln Memorial Univ., 1911	1920	1920
Tilson, Jacob Carson, Marshall Lincoln Memorial Univ., 1885	1885	1904

MARTIN COUNTY SOCIETY

President, Roderick Mark Buie, Everetts Jeff. Med. Coll., Phila., 1914	1914	1916
Secretary, Wm. E. Warren, Williamston Nongrad Univ., 1877	1893	1894
Godwin, G. C., Williamston	....	1920
Hargrove, R. H., (Hon.), Robersonville Univ. of Md., 1877	1879	1879
Harrell, W. H., Williamston	....	1890
Knight, J. B. H., (Hon.), Williamston P. & S., Balt., 1885	1885	1890
Long, Benj. L., (Hon.), Hamilton Univ. of Md., 1881	1883	1885
Long, Edgar M., Oak City Univ. of Md., 1909	1909	1910
Nelson, Robert J., Robersonville Louisville Med. Coll., 1890	1890	1893
Pittman, E. E., Oak City Med. Coll. Va., 1919	1919	1920
Rhodes, James S., Williamston Med. Coll. of Va., 1906	1906	1907
Saunders, Jos. H., Williamston Univ. Med. Coll. of Va., 1905	1905	1909
Smithwick, James E., Jamesville Med. Coll. of Va., 1897	1897	1904
Ward, Jesse E., Robersonville Univ. of Md., 1904	1904	1905
Warl, Vernon Albert, Robersonville Jeff. Med. Coll., Phila., 1908	1908	1914
York, Hugh B., Williamston P. & S., Balt., 1906	1906	1907

MECKLENBURG COUNTY SOCIETY

President, Charles M. Strong, Charlotte Univ. of Md., 1888	1898	1898
Secretary, J. Lester Ranson, Charlotte N. C. Med. Coll., 1911	1911	1912
Alexander, Annie L., (Hon.), Charlotte Women's Med. Coll., Pa., 1884	1885	1890
Alexander, James R., Charlotte Univ. of Md., 1894	1894	1899
Alexander, Janet, Montgomery, India	....	1918
Allan, William, Charlotte	1906	1914
Ashe, J. R., Charlotte Columbia Univ., 1911	1915	1915
Austin, Frederick De Costa, Charlotte	1907	1908
Austin, D. R., Charlotte Jeff. Med. Coll., 1917	1917	1918
Austin, J. A., Charlotte Jeff. Med. Coll., Phila., 1882	1882	1904

Name and Address	*Licensed*	*Joined State Society*
Barrett, H. P., Charlotte Univ. of Louisville, 1908	1917	1919
Barron, A. A., Charlotte Vanderbilt Univ., 1909	1909	1910
Blalock, B. K., Charlotte, North Univ. of Md., 1913	1913	1917
Boyette, E. C., Charlotte Balt. Med. Coll., 1893	1896	1906
Brenzier, A. G., Jr., Charlotte Johns Hopkins; Univ. of Heidelberg, 1908	1910	1911
Caldwell, Joe H., Charlotte N. C. Med. Coll., 1914	1914	1914
Clifford, John S., Charlotte George Washington Univ., 1906	1917	1918
Craven, Thomas, Charlotte Jeff. Med. Coll., 1917	1917	1918
Craven, W. W., Huntersville Univ. of Md., 1903	1904	1904
Crowell, Andrew J., Charlotte Univ. of Md., 1893	1892	1894
Davidson, John E. S., Charlotte Univ. of Md., 1894	1898	1898
DeArmond, J. McC., (Hon.), Charlotte Univ. of Md., 1886	1886	1887
Donelly, J. Charlotte N. C. Univ., 1905	1905	1918
Elliott, J. A., Charlotte Univ. of Mich., 1914	1919	1920
Faison, I. W., (Hon.), Charlotte Bellevue Med. Coll., 1878	1878	1878
Fiason, Yates W., Charlotte Harvard Univ., 1910	1910	1912
Fetner, L. M., Charlotte N. C. Med. Coll., 1913	1913	1915
Gallant, Robert M., Charlotte N. C. Med. Coll., 1915	1915	1916
Gibbon, Robert L., (Hon.), Charlotte Jeff. Med. Coll., 1888	1887	1888
Graham, Wm. A., (Hon.), Charlotte P. & S., N. Y., 1888	1890	1890
Hackett, L. E., Charlotte N. C. Med Coll., 1917	1917	1919
Hand, Edgar H., Pineville N. C. Med. Coll., Charlotte, 1907	1907	1913
Henderson, S. McD., Charlotte Univ. of Md., 1894	1894	1904
Herring, W. Conyers, Parsons, Kansas Univ. of N. Y., 1890	....	1918
Herron, Alexander M., Charlotte Med. Coll. of S. C., 1882	1884	1884
Houser, O. J., Charlotte N. C. Med. Coll., 1914	1914	1916
Hovis, L. W., Charlotte N. C. Med. Coll., 1904	1904	1906
Hudson, C. C., Charlotte Univ. Coll. of Med., Richmond, 1910	1910	1918
Hunter, Baxter R., Parsons, Kansas	....	....
Hunter, L. W., (Hon.), Charlotte, R. No. 1 Bellevue Hosp., N. Y., 1875	1880	1880

Name and Address	*Licensed*	*Joined State Society*
Hunter, Myers, Charlotte Georgetown Univ., 1905	1906	1908
Hunter, M. C., Huntersville Coll. of P. & S., Balt., 1882	1882	1918
Irwin, Henderson C., Charlotte Univ. of Md., 1912	1914	1916
Irwin, J. R., (Hon.), Charlotte Univ. of Md., 1879	1882	1882
Johnston, J. G., Charlotte Med. Dept. Vanderbilt Univ., 1899	1913	1916
Justice, Z. K., Davidson N. C. Med. Coll., 1903	1917	1919
Keiger, James A., Raleigh Univ. of Va., 1916	1916	1919
Kennedy, John P., Charlotte Jeff. Med. Coll., 1915	1915	1920
King, Parks M., Charlotte Bellevue Med. Coll., 1902	1902	1904
Lafferty, Robert H., Charlotte N. C. Med. Coll., 1906	1906	1908
Leinbach, Robert F., Charlotte Univ. of Pa., 1907	1907	1910
Linney, R. Z., Charlotte Georgetown Univ., 1901	1914	1918
Lubchenko, N. E., Newells N. C. Med. Coll., Charlotte	1915	1916
MacConnell, John W., Davidson Univ. of Md., 1907	1908	1909
McKay, Hamilton W., Charlotte Jeff. Med. Coll., 1910	1911	1913
McLaughlin, Calvin S., Charlotte Univ. of Md., 1896	1896	1903
Martin, W. J., Davidson Univ. of Va., 1890	1891	1919
Matheson, James P., Charlotte N. C. Med. Coll., 1902	1902	1907
Mills, C. H. C., Charlotte Univ. of Md., 1897	1900	1919
Misenheimer, Charles A., (Hon.), Charlotte N. Y. Univ. Med. Coll., 1882	1882	1882
Montgomery, John C., Charlotte N. Y. Univ. Med. Coll., 1891	1891	1895
Moore, Alexander W., Charlotte Univ. of Pa., 1901; Univ. of N. Y., 1902	1912	1913
Moore, Baxter S. ,Charlotte Univ. of Va., 1901	1905	1905
Moore, Oren, Charlotte N. C. Med. Coll., 1911	1911	1912
Munroe, J. P. (Hon.), Charlotte Univ. of Va., 1885	1885	1890
Myers, Alonzo, Charlotte N. C. Med. Coll., 1911	1911	1920
Myers, John Q., Charlotte N. C. Med. Coll., 1904	1904	1910
Nalle, B. C., Charlotte Univ. of Va., 1903	1905	1905
Newell, Leone B., Charlotte Univ. of N. C., 1905	1905	1908
Nisbet, Heath, Charlotte Harvard Med. Dept., 1917	1917	1920

Name and Address	*Licensed*	*Joined State Society*
Nisbet, Walter O., Charlotte Med. Coll. of S. C., 1889	1889	1889
Parsons, W. H., Charlotte N. C. Med. Coll., 1916	1918	1919
Patterson, Reid, Charlote, R. F. D. N. C. Med. Coll., 1912	1903	1903
Peeler, Clarence N., Charlotte N. C. Med. Coll., 1906	1906	1908
Petrie, Robert Wm., Charlotte, R. F. D. Univ. of Md., 1903	1903	1903
Petteway, G. H., Charlotte, R. F. D. N. C. Med. Coll., 1913	1913	1914
Pharr, Wm., W., (Hon.), Charlotte P. & S., Balt., 1882	1883	1887
Pressley, Geo. W., Charlotte Jeff. Med. Coll., Jhila., 1892	1895	1896
Query, Richarl Z., Charlotte, R. F. D. Univ. Coll. of Med., Va., 1907	1907	1908
Reid, Thomas N., Matthews N. Y. Univ. Med. Coll., 1891	1891	1904
Ross, Otho B., Charlotte Univ. of Pa., 1901	1901	1912
Ruff, F. R., Charlotte Univ. Coll. of Med., Va., 1913	1915	1916
Scruggs, W. Marion, Charlotte Univ. of Pa., 1914	1914	1920
Simmons, John O., Charlotte Grant Univ., 1894	1906	1908
Sloan, H. L., Charlotte Univ. of Pa., 1911	1913	1914
Strong, Wm. M., Charlotte N. C. Med. Coll., Charlotte, 1904	1904	1905
Taylor, H. C., Charlotte Tenn. Med. Coll., 1914	1910	1915
Thompson, S. R., Charlotte N. C. Med. Coll., 1914	1914	1915
Todd, L. C., Charlotte Univ. of Miss., 1918	....	1920
Townsend, M. L., Charlotte Indiana Med. Coll., Purdue Univ., 1906	1912	1913
Tucker, John H., Charlotte Univ. of Va., 1899	1899	1911
Tydeman, F. W. L., Wood River, Ill. N. C. Med. Coll., Charlotte, 1912	1912	1918
Wakefield, Harry A., Charlotte N. C. Med. Coll., 1908	1908	1911
Wakefield, Wm. H., Charlotte Ky. Coll. of Med., 1890	1891	1893
Walker, L. D., Charlotte Med. Coll. of Va., Richmonl, 1908	1917	1919
Warren, A. J., Charlotte Tulane Univ., 1914	1914	1919
Whisnant, Albert M., Charlotte P. & S., Balt., 1893	1893	1899
Whiteley, A. W., Matthews, R. No. 19 Balt. Med. School, 1908	1908	1919
Wingate, G. C., Charlotte N. C. Med. Coll., 1914	1915	1919
Wishart, Wm. E., Charlotte N. C. Med. Coll., 1911	1911	1911

Name and Address	*Licensed*	*Joined State Society*
Withers, G. L., Davidson N. C. Med. Coll., 1914	1914	1918
Withers, J. J., Davidson Jeff. Med. Coll., Phila., 1909	1909	1916
Witherspoon, B. J., Charlotte S. C. Med. Coll., 1894	1900	1911
Wright, Thomas H., Charlotte Univ. of Va., 1901	1904	1910

MITCHELL-WATAUGA COUNTY SOCIETY

President	....	....
Secretary,	....	....
Bingham, G. D., Sugar Grove	....	1920
Gouge, A. E., Bakersville	....	1920
Jones, J. Walter, Boone Chattanooga Med. Coll., 1900	1902	1904
Peterson, C. A., Spruce Pines N. C. Med. Coll., 1907	1907	1908
Smith, C. E. Ledger	....	1920

MONTGOMERY COUNTY SOCIETY

President, Charles B., Ingram, Mt. Gilead Jeff. Med. Coll., Phila., 1886	1886	1902
Secretary, Charles Daligny, Troy Military Med. School, Paris, 1878	1885	1891
Dameron, Ernest L., Star N. C. Med. Coll., 1911	1911	1913
McMillan, J. M., Candor Atlanta Coll. of P. & S., 1909	1909	1911
Nicholson, Mt. Gilead	....	1920
Rankin, Pressly R., Mt. Gilead N. C. Med. Coll., 1910	1910	1912
Shamburger, John B., Star Univ. of Md., 1890	1890	1892
Thompson, Alexander Frank, Troy Med. Coll. of Indiana, 1895	1895	1904

MOORE COUNTY SOCIETY

President, M. E. Street, Glendon, P. & S., Balt., 1893	1893	1902
Secretary, A. McNiel Blair, Southern Pines, Univ. of N. Y., 1897	1904	1906
Achorn, John W., Pine Bluff Med. Sch. of Med., 1887; Bellevue Med. Coll., 1889	1899	1899
Blue, A. McN., Carthage Tulane Univ., 1915	1916	1917
Bowman, H. E., Aberdeen N. C. Med. Coll., 1905	1904	1919
Davis, J. Franklin, High Falls Med. Coll. of Va., 1912	1912	1906
Grier, Charles T., Carthage N. C. Med. Coll., 1910	1912	1913
McBrayer, L. B., Sanatorium Univ. of Md.; Coll. of P. & S., Balt., 1891	1891	1899
McDonald, Augustus A., Jackson Springs N. C. Med. Coll., 1905	1905	1912
McLeod, A. H., Aberdeen Balt. Med. Coll., 1896	1896	1904

Name and Address	*Licensed*	*Joined State Society*
McLeod, Gilbert M., Carthage Univ. of Md., 1882	1885	1904
Marr, M. W., Pinehurst Tufts Coll. Med. School, Boston, 1907	1907	1915
Mudgett, W. C., Southern Pines Univ. of Md., 1903	1908	1911
Shields, Henry B., Carthage Atlanta Med. Coll., 1882	1887	1904
Sweet, Wm. P., Southern Pines Univ. of Vermont, 1876	1893	1901
Thompson, Fred, Pine Bluff Harvard Univ., 1888	1912	1914

NASH COUNTY SOCIETY

President	....	....
Secretary, D. L. Knowles, Rocky Mount Univ. of Pa., 1918	1918	1920
Battle, Ivan Proctor, Rocky Mount Univ. of Md., 1889	1889	1914
Battle, James P., Nashville Univ. of Md.; Coll. of P. & S., 1889	1888	1904
Boice, E. S., Rocky Mount Univ. of Pa., 1909	1914	1915
Coppedge, T. O., Nashville Coll. of P. & S., Balt., 1908	1909	1917
Fleming, M. I., Rocky Mount	....	1919
Hines, E. R., Rocky Mount Med. Coll. of S. C., 1916	1916	1917
Kornegay, Lemuel W., Rocky Mount N. C. Med. Coll., 1906	1906	1914
Lane, John L., Rocky Mount N. C. Med. Coll., 1906	1906	1914
Large, H. Lee, Rocky Mount Med. Coll. of Va., 1917	1918	1918
Looney, J. J. W., Rocky Mount	....	1919
McCall, A. C., Rocky Mount Univ. of Md., Balt., 1910	1910	1914
Martin, J. H., Battleboro, R. F. D. Univ. of Nashville, 1903	1904	1916
Matthews, Thomas A., Castalia Univ. of Md., 1890	1891	1893
Noell, R. H., Rocky Mount Univ. of Md., 1916	1916	1920
Perry, E. M., Rocky Mount P. & S., Balt., 1907	1907	1920
Quillen, Emile B., Rocky Mount Univ. of Md., 1904	1906	1914
Smith, C. T., Rocky Mount Univ. of Pa., 1918	1918	1920
Speight, J. A., Rocky Mount Jeff. Med. Coll., Phila., 1906	1906	1916
Speight, J. P., Rocky Mount Jeff. Med. Coll., Phila., 1906	1906	1917
Staley, S. Walter, Rocky Mount Med. Coll. of S. C., 1901	1901	1914
Wheless, J. R., Spring Hope	....	1920
Whitehead, J. P., Rocky Mount Univ. of Md., 1899	1889	1914
Willis, B. C., Rocky Mount Med. Coll. of Va., 1909	1915	1916

Name and Address	*Licensed*	*Joined State Society*
Winstead, J. A., Nashville N. C. Med. Coll., 1914	1916	1916

NEW HANOVER COUNTY SOCIETY

President, Andrew Harriss, Wilmington Medico-Churugical, Phila., 1893	1892	1894
Secretary, Ernest S. Bulluck, Wilmington Univ. of Md., 1911	1911	1911
Bellamy, Robert H., Wilmington Jeff. Med. Coll., Phila., 1902	1902	1902
Bolles, Charles P., Jr., Wilmington Univ. of Va., 1897	1908	1909
Bowdoin, George E., Wilmington Med. Coll. of Va., 1914	1914	1916
Cathell, J. E., Wilmington Univ. of Md., 1899	1902	1906
Codington, H. A., Wilmington Univ. of Md., 1911	1915	1917
Cranmer, J. B., Wilmington Univ. of N. C., 1905	1905	1907
Croom, A. B., Wilmington Univ. of Md., 1905	1909	1916
Croom, G. H., Wilmington N. C. Med. Coll., 1909	1909	1916
Crouch, A. McR., Wilmington Jeff. Med. Coll., Phila., 1916	1916	1918
Davis, Ralph H., Wilmington George Washington Univ., 1917	....	1920
Farthing, L. E., Wilmington Univ. of N. C., 1906	1906	1913
Galloway, Walter Curtis, (Hon.), Wilmington Washington School of Med., 1874	1880	1880
Graham, Benj. R., Wilmington Univ. of Va., 1895	1895	1916
Green, Thomas M., Wilmington Univ. of Md., 1900	1900	1904
Hart, E. R., Wilmington Univ. of Md., 1901	1901	1918
Honnet, Joseph H., Wilmington P. & S., Balt., 1896	1901	1904
Hooper, Joseph W., Wilmington Univ. of Md., 1909	1912	1919
Jewett, R. D., (Hon.), Wilmington Univ. of Va., 1888	1890	1890
Koonce, S. Everett, Wilmington P. & S., Balt., 1896	1896	1920
Love, W. J., (Hon.), Wilmingotn S. C. Med. Coll., 1861	1861	1894
Low, C. E., Wilmington Univ. of Buffalo, 1896	1869	1920
McDonald, A. D., (Hon.), Wilmington Washington Univ. School of Med., 1877	1870	1879
McMillan, W. D., (Hon.), Wilmington Univ. of Md., 1868	....	1892
Mebane, W. C., Wilmington N. C. Med. Coll., 1905	1905	1916
Miller, J. F., Wilmington Med. Chi., Phila., 1906	1915	1919
Moore, Wm. H., Wilmington Jeff. Med. Coll., Phila., 1910	1910	1911

Name and Address	*Licensed*	*Joined State Society*
Murphy, John G., Wilmington Univ. of Louisville, 1903	1903	1905
Nesbitt, Charles T., Akron, Ohio Balt. Med. Coll., 1903	1907	1908
Page, B. W., Wilmington Tulane Univ., 1909	1909	1919
Robertson, James F., Wilmington Univ. of Pa., 1913	1913	1916
Schonwald, John T., (Hon.), Wilmington Long Island Med. Coll., 1879	1880	1881
Sidbury, J. B., Wilmington Columbia Univ., N. Y., 1912	1915	1916
Sloan, D. B., Wilmington	....	1920
Slocum, R. B., Wilmington Johns Hopkins, 1905	1907	1907
Thomas, G. G., (Hon.), Wilmington Univ. of Md., 1871	1871	1872
Wessell, John C., Wilmington Univ. of Md., 1900	1900	1900
Williams, L. P., Wilmington Bell. Hosp. Med. Coll., N. Y., 1918	1919	1920
Wood, E. J., Wilmington Univ. of Pa., 1902	1903	1903
NORTHAMPTON COUNTY SOCIETY		
President, C. P. Parker, Seaboard Univ. Coll. of Med., Va., 1915	1912	1916
Secretary, Paul G. Parker, Jackson Med. Coll. of Va., Richmond, 1916	1916	1917
Bolton, Mahlon, (Hon.), Rich Square Jeff. Med. Coll., Phila., 1885	1885	1885
Brittle, Paul C., Conway Univ. Coll. of Med., Va., 1907	1907	1910
Lewis, H. W., (Hon.), Jackson Univ. of N. Y., 1877	1885	1887
Lister, J. L., Jackson Med. Coll. of Va., 1896	1896	1909
McDaniels, L. E., Lasker Univ. of Md., 1911	1915	1916
Parker, Clifton G., Woodland Univ. of Va., 1907	1907	1913
Parker, Walter R., Woodland Med. Coll. of Va., 1916	1916	1919
Vaughan, J. C., Rich Square Med. Coll. of Va., 1915	1915	1916
ONSLOW COUNTY SOCIETY		
President, E. L. Cox, Jacksonville Univ. of Md., 1889	1892	1892
Secretary, A. M. McCuiston, Richlands N. C. Med. Coll., 1911	1911	1917
Bryan, Lorenzo D., Sneads Ferry Tulane, 1910	1910	1911
Duffy, Richard N., New Bern Johns Hopkins Univ., Med. Dept., 1906	1907	1908
Hammond, A. F., Pollocksville Va. Univ., Coll., of Med., 1903	1903	1914
Parrott, Wm. T., Kinston Tulane Univ., 1895	1895	1901
Sutton, Carl W., Richlands Tulane Med. Coll., 1905	1905	1907
Thompson, Cyrus, Jacksonville Univ. of Pa., 1878	1885	1905

ORANGE COUNTY SOCIETY

(See Durham-Orange)

PAMLICO COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President, D. A. Dees, Bayboro Balt. Med. Coll., 1903	1903	1905
Secretary, J. J. Purdy, Oriental Med. Coll. of Va., 1900	1914	1915
Attmore, Geo. S., (Hon.), Stonewall Washington Univ. School of Med., 1870	1870	1872
McClees, Jas. E., Oriental	....	1920
McCotter, St. Elmo, Bayboro P. & S., Atlanta, Ga., 1908	1908	1909

PASQUOTANK-CAMDEN-DARE COUNTY SOCIETY

President, Thos. S. McMullan, Elizabeth City Univ. of Va., 1888; Univ. of N. Y., 1889	....	1919
Secretary, H. D. Walker, Elizabeth City Univ. of Md., 1902	1902	1902
Davis, R. B., Weeksville Med. Coll. of Va., Richmond, 1915	....	1917
Fearing, Isaiah, Elizabeth City P. & S., Balt., 1896	1896	1904
Fearing, Zenas, Elizabeth City Va. Univ. Coll. of Med., 1901	1901	1904
Gates, F. P., Manteo Bellevue Hosp. Med. Coll., N. Y., 1886	1886	1892
Griggs, John B., Elizabeth City Univ. of Md., 1892	1892	1904
Hoggard, Wm. Alden, Woodville Univ. Coll. of Med., Va., 1907	1907	1910
Kendrick, R. L., Elizabeth City Univ. of Va., 1913	1913	1915
Lister, E. W., Weeksville Med. Coll. of Va., 1896	1896	1916
Newby, G. E., Hertford Jeff. Med. Coll., Phila., 1900	1901	1916
Peters, W. A., Elizabeth City Med. Coll. of Va., 1915	1915	1916
Saliba, John, Elizabeth City Univ. of Edinburg, Scotland, 1893	1914	1914
Sawyer, W. W., Elizabeth City Univ. of Md., 1903	1903	1904
Stephens, W. L., Shiloh Univ. Coll. of Med., Va., 1912	1912	1914
Williams, Claude B., Elizabeth City Univ. Coll. of Med., Va., 1903	1903	1907

PENDER COUNTY SOCIETY

President	....	....
Secretary	....	....
Taylor, W. I., Burgaw N. C. Med. Coll., 1902	1904	1905

PERQUIMANS COUNTY SOCIETY

(See Chowan-Perquimans)

PERSON COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President, Geo. W. Gentry, Timberlake Univ. of N. C., 1910	1910	1911
Secretary, Austin F. Nichols, Roxboro Univ. of N. C., 1909	1908	1909
Baynes, R. S., Hurdle Mills P. & S., Balt., 1881	1881	1904
Bradsher, Wm. A., Roxboro Univ. of Md., 1904	1904	1905
Long, Walter T., Roxboro Balt. Med. Coll., 1905	1905	1907
Love, Bedford E., Roxboro Univ. of Md., 1904	1904	1905
Merritt, John H., Woodsdale, R. No. 2 Univ. of N. C., 1906	1907	1908
Montague, S. S., Roxboro, R. No. 2 Jeff. Med. Coll., Phila., 1910	1910	1916
Swann, Jos. F., Semora P. & S., Balt., 1898	1898	1905
Teague, R. J., Roxboro Univ. of Md. and P. & S., Balt., 1890	1890	1902

PITT COUNTY SOCIETY

President, C. J. Ellen, Greenville Univ. Coll. of Med., Richmond, 1911	1911	1919
Secretary, P. J. Chester, Greenville	....	1920
Basnight, Thomas G., Stokes Univ. of Md., 1905	1905	1907
Beasley, E. B., Fountain Univ. of Pa., School of Med., Phila., 1911	1911	1915
Dawson, Walter W., Grifton Univ. of Md., 1897	1897	1900
Dixon, G. G., Ayden Med. Coll. of Va., Richmond, 1915	1915	1917
Dixon, Joseph, Ayden Med. Coll. of Va., 1894	1893	1895
Dixon, Wm. H., Ayden Univ. of Va., 1901	1901	1903
Frizzell, M. T., Ayden Univ. of Md., 1907	1907	1909
Garrenton, Cecil, Bethel Med. Coll. of Va., Richmond, 1908	1908	1915
Green, J. C., Greenville Med. Coll. of Va., 1900	1900	1915
Hemmingway, J. D., Bethel N. C. Med. Coll., 1915	1917	1917
Jones, C. M., Grimesland Univ. of Md.; Coll. of P. & S., Balt., 1892	1892	1895
Joyner, C. C., Farmville	....	1920
Laughinghouse, Charles O'H., Greenville Univ. of Pa., 1893	1893	1894
Morrill, D. S., Farmville Balt. Med Coll., 1897	1897	1903
Morrill, Jenness, Falkland Univ. of Md., 1888	1888	1900
Moseley, H. P., Farmville Univ. Coll. of Med., Richmond, 1912	1912	1915
Nobles, Jos. E., Greenville, (Hon.) Jeff. Med. Coll., 1899	1899	1902

Name and Address	*Licensed*	*Joined State Society*
Pace, K. B., Greenville	....	1920
Skinner, Louis Cotton, Greenville Univ. of Md., 1901	1901	1903
Smith, Joseph, Greenville	....	1920
Summerell, G. H., Ayden	....	1919
Whitfield, Wm. Cobb (Hon.), Grifton Univ. of Md., 1884	1884	1884

POLK COUNTY SOCIETY

(See Henderson)

RANDOLPH COUNTY SOCIETY

President, Charles C. Hubbard, Farmer Jeff. Med. Coll., Phila., 1888	1890	1904
Secretary, Thomas I. Fox, Franklinville Vanderbilt Univ., 1894	1899	1904
Asbury, Francis E. (Hon.), Ashboro S. C. Med. Coll., 1876	1899	1904
Craven, F. C., Ramseur Univ. of Md., 1913	1913	1914
Hayworth, C. A., Ashboro Univ. of Md., 1902	1913	1914
Hayworth, Ray, Ashboro	....	1920
Hunter, J. V., Ashboro Univ. of Louisville, 1898	1898	1905
Moore, Wm. Jones, Ashboro P. & S., Balt., 1893	1893	1901
Phillips, Charles H., Fullers Balt. Univ. School of Med., 1892	1893	1911
Redding, Alex. H., Cedar Falls P. & S., Balt., 1887	1881	1904
Sumner, Wm. I., Randleman Univ. of Tenn., 1893	1893	1904
Tate, C. S., Ramseur Balt. Med. Coll., 1893	1896	1914
Wilkerson, Charles E., Randleman	....	1909

RICHMOND COUNTY SOCIETY

President, W. R. McIntosh, Roberdel N. C. Med. Coll., 1913	1916	1917
Secretary, A. C. Everett, Rockingham Univ. of Md., 1897	1897	1903
Garrett, F. B. Rockingham N. C. Med. Coll., 1912	1912	1914
Garrett, F. J., Rockingham Univ. of Md., 1889	1887	1904
Howell, W. L., Ellerbe, R. F. D. N. C. Med Coll., 1910	1910	1911
James, W. D., Hamlet Jeff. Medical Coll., Phila., 1908	1908	1915
Ledbetter, James McQ., Rockingham Vanderbilt Univ., 1894	1894	1903
McPhail, L. D., Rockingham Univ. of Md., 1900	1900	1902
Maness, J. M., Ellerbe Univ. of N. C., 1909	1909	1910
Quick, Fred D., Rockingham	....	1920
Terry, Wm. Calvin, Hamlet N. C. Med. Coll., 1911; Univ. of Md., 1912	1912	1914

Name and Address	*Licensed*	*Joined State Society*
Webb, W. P., Rockingham Med. Coll. of S. C., 1897	1897	1904

ROBESON COUNTY SOCIETY

President, Thomas C. Johnson,, Lumberton Med. Coll. of Va., Richmond, 1903	1903	1903
Secretary, J. A. Martin, Lumberton Med. Coll. of Va., Richmond, 1915	1915	1917
Andrews, Nathan H., Rowland N. C. Med. Coll., 1911	1911	1912
Baker, Horace M., Lumberton Harvard Med. School, 1917	1917	1919
Beam, R. S., Lumberton Jeff. Med. Coll., 1912	1912	1915
Bowman, E. L., McDonalds Med. Coll. of Va., 1914	1914	1916
Brown, J. P., Fairmont Univ. of Md., 1883	1887	1893
Carmichael, Thaddeus W., Rowland Ky. Univ. of Med., 1904	1911	1910
Costner, Thos. F., Lumberton Jeff. Med. Coll., 1882	1885	1918
Currie, Daniel S., Parkton N. C. Med. Coll., 1906	1906	1907
Evans, W. E., Rowland Med. Coll. of Va., 1894	1894	1904
Hardin, E. R., Lumberton Univ. of Ga., 1911	1911	1920
Harris, David W., Maxton Univ. of N. C., 1908	1908	1911
Hays, A. H. Fairmont Univ. of Ga., 1917	1917	1919
Hodgin, H. H., Red Springs Univ. of Md., 1905	1906	1907
Knox, John, Jr., Lumberton Univ. of Md., 1906	1907	1907
McClelland, Joseph O., Maxton Med. Coll. of Va., Richmond, 1908	1912	1913
McMilland, Benj. F. (Hon.), Red Springs Univ. of Md., 1882	1884	1884
McMillan, Edwin G., Maxton Univ. of Tulane, 1919	1919	1920
McMillan, J. L. (Hon.), Red Springs Univ. of Md., 1881	1881	1885
McMillan, Roscoe D., Red Springs Univ. of Md., 1910	1911	1912
Nash, J. Fred, St. Pauls N. C. Med. Coll., 1914	1914	1916
Norman, J. S., Boardman P. & S., Balt., 1909	1911	1920
Norment, Thos. A., Lumberton N. C. Med. Coll., 1894	1893	1904
Poole, Claud T., St. Pauls N. C. Med. Coll., 1907	1908	1913
Pope, Henry T., Lumberton N. C. Med. Coll., 1894	1893	1902
Price, H. L., Fairmont N. C. Med. Coll., 1914	1914	1920
Reedy, Howard, Rowland Med. Coll. of S. C., 1884	1887	1914

Name and Address	*Licensed*	*Joined State Society*
Ricks, Leonard E., Fairmont Med. Coll. of Va., 1896	1896	1913
Rozier, Richard G., Lumberton Univ. of Md., 1899	1899	1904
Smith, John McNeill, Rowland Jeff. Med. Coll., 1908	1908	1909
Stamps, Thos. (Hon.), Lumber Bridge Univ. of Louisville, 1888	1888	1890
Thompson, Neill A., Lumberton Md. Med. Coll., 1905	1895	1904
Tyner, Carl V., Lumberton Bellevue Med. Coll., 1916	1916	1919
Watson, Thomas W., Maxton Tulane Univ., 1919	1919	1920
West, George H., Fairmont Jeff. Med. Coll.	....	1919

ROCKINGHAM COUNTY SOCIETY

President	....	...
Secretary, James T. Taylor, Madison Univ. of Md.; Coll. of P. & S., Balt., 1908	1908	1910
Abernathy, Miles B., Reidsville N. C. Med. Coll., 1906	1906	1910
Cummings, M. P., Reidsville Jeff. Med. Coll., 1911	1911	1914
Dillard, G. P., Draper Chicago Coll. of Med. & Surg., 1916	1916	1919
Ellington, Samuel B., Wentworth Washington Univ. School of Med., 1872	1885	1904
Fetzer, P. W., Mayodan	....	1920
Jett, Samuel G., Reidsville Univ. of the South, 1903	1908	1911
Johnson, W. A., Reidsville, R. F. D. N. C. Med. Coll., 1907	1909	1910
McBryde, M. H., Reidsville	....	1904
McGehee, John Wm., Reidsville Univ. of Md., 1904	1904	1905
Martin, Sydnor L., Leaksville Balt. Med. Coll., 1892	1892	1904
Matheson, R. C., Madison P. & S., Balt., 1891	1891	1904
Mathews, Wm. W., Spray Chicago Coll. of Med. & Surg., 1913	1915	1918
Ray, John B., Leaksville Balt. Med. Coll., 1898	1898	1898
Stewart, J. T., Summerfield, R. F. D.	1898	1898
Stokes, P. G., Ruffin	....	1920
Taylor, T. G., Leaksville Ky. School of Med., 1877	1877	1910
Tuttle, A. F., Spray N. C. Med. Coll., 1901	1901	1907
Webb, S. Edgar, Madison N. C. Med. Coll., 1908	1908	1916
Wilson, W. P., Madison N. C. Med. Coll., 1908	1908	1916

ROWAN COUNTY SOCIETY

President, Julian Busby, Spencer Univ. of Md., 1904	1904	1905
Secretary, Frank A. Ellis, Salisbury Univ. of Pa., 1919	1919	1919

Name and Address	*Licensed*	*Joined State Society*
Armstrong, C. W., Salisbury Univ. of Md., 1914	1915	1920
Black, I. R., Landis N. C. Med. Coll.	....	1920
Brawley, M. H., Salisbury N. C. Med. Coll., 1910	1912	1914
Brawley, Robert V., Salisbury Univ. Coll. of Med., Va., 1903	1903	1904
Brown, G. A., Mt. Ulla Univ. of Va., 1897	1897	1898
Choate, Glenn Wm., Salisbury Univ. of Med. Coll. of Va., 1909	1909	1909
Council, J. B. (Hon.), Salisbury P. & S., Balt., 1884	1885	1885
Edwards, B. O. Asheville N. C. Med. Coll., 1905	1905	1909
Heilig, Herman G., Salisbury Univ. of Md., 1899	1899	1904
McKenzie, B. W., Salisbury Jeff. Med. Coll., 1916	1916	1920
McKenzie, Wm. W., Salisbury Jeff. Med. Coll., 1893	1893	1894
Monk, Henry L., Salisbury Med. Coll. of Va., 1897	1899	1903
Newman, Harold H., Salisbury Johns Hopkins Univ., 1913	1914	1916
Peeler, John H., Salisbury Va. Univ. Coll. of Med., 1899	1899	1904
Ramseur, Geo. A., China Grove Jeff. Med. Coll., 1880	1886	1887
Shafer, Irving E., Salisbury N. C. Med. Coll., 1914	1914	1914
Sigman, Frederick G., Spencer Univ. Med. Coll. of Va., 1909	1909	1910
Slate, Wesley C., Spencer Univ. of Tenn., 1903	1909	1913
Spencer, Frederick B., Salisbury Univ. of N. C., 1909	1909	1913
Stokes, James Ernest, Salisbury Univ. of Md., 1892	1900	1901
Summerell, E. M., (Hon.), Salisbury Univ. of Pa., 1883	1883	1883
Trantham, H. T. (Hon.), Salisbury Univ. of N. Y., 1875	1878	1879
Van Poole, C. M. (Hon.), Salisbury P. & S., Balt., 1880	1880	1880
West, Robert M., Salisbury Med. Coll. of Va., 1900	1900	1904
Whitehead, John (Hon), Salisbury Univ. of Pa., 1880	1880	1880
Woodson, Charles W., Salisbury P. & S., N. Y., 1904	 1905	1904
RUTHERFORD COUTNY SOCIETY		
President, Charles F. Gold, Ellenboro Univ. of N. C., 1910	1910	1911
Secretary, D. R. Schenck, Rutherfordton Jeff. Med. Coll., 1883	1884	1918
Allhands, John M., Cliffside Chicago Coll. of Med. & Surg., 1910	1910	1911
Andrews, Robert M., Bostic	1904	1905

Name and Address	*Licensed*	*Joined State Society*
Memphis Hosp. Med. Coll., 1904		
Biggs, Montgomery H., Rutherfordton	1907	1908
Univ. of Pa., 1897		
Bostic, Wm. C., Forest City	1905	1905
N. C. Med. Coll., 1905		
Buchanan, C. L., Union Mills	1910	1914
Tenn. Med. Coll., 1910		
Danson, Amos, Avondale	1919	1920
Med. Coll. of Va., 1919		
Harrill, L. B., Caroleen	1902	1904
Grant Univ., 1897		
Hicks, Romeo, Henrietta	....	1899
Southern Med. Coll., Atlanta, 1888		
Logan, F. W. F., Union Mills	1916	1919
N. C. Med. Coll., 1916		
Lovelace, T. C., Henrietta	1885	1904
P. & S., Balt., 1883		
Norris, Henry, Rutherfordton	1907	1908
Univ. of Pa., 1896		
Reid, George P., Forest City	1894	1899
Univ. Coll. of Med., Va., 1895		
Rucker, Adin Adam, Uree	1908	1909
Univ. of Md., 1908		
Shull, John R., Cliffside	1910	1913
Univ. of Pa., 1910		
Thompson, J. B., Bostic	1898	1904
P. & S., Balt., 1898		
Thompson, Worth A., Rutherfordton	1895	1904
P. & S., Balt., 1885		
Twitty, John C., Rutherfordton	1892	1904
Balt. Med. Coll., 1892		
Wiseman, Charles B., Henrietta	1902	1902
P. & S., Balt., 1902		

SAMPSON COUNTY SOCIETY

President	....	....
Secretary, O. L. Parker, Clinton	1918	1919
Med. Coll. of Va., 1918		
Beard, G. C., Kerr	1912	1916
Univ. of Md., 1912		
Crumpler, Paul, Clinton	1907	1908
Univ. of Tenn., 1907		
Hollingsworth, E. T., Clinton	1912	1915
N. C. Med Coll., 1912		
Kerr, John D., Jr., Clinton	1908	1910
Univ. of Md., 1908		
Matthews, James O., Clinton, R. F. D.	1879	1902
Univ. Coll. of Med., Va., 1897		
Parker, J. R., Clinton	....	1919
Univ. of Md., Med. School		
Sessoms, E. T., Turkey	....	1917
Sloan, Wm. H., Garland	....	1920
Sloan, Wm. Henry, Ingold	....	1920
Sykes, Gibson L., Salemburg	1900	1902
Univ. Coll. of Med., Va., 1900		
Turlington, H. C., Cooper	1913	1914
Univ. Coll. of Med., Va., 1913		
Underwood, O. E., Roseboro	1909	1910
Univ. Coll. of Med., Va., 1909		
Wilson, Robert B., Newton Grove	1889	1904
Ky. School of Med., 1889		

SCOTLAND COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President	....	....
Secretary	....	....
Cannady, N. B., Laurinburg Univ. of N. C., 1912	1912	1916
Erwin, Evan A., Laurinburg Med. Coll. of S. C., 1912	1913	1913
Gibson, John S., Gibson Univ. of Md., 1905	1905	1907
Hunter, N. C., Laurinburg Medico-C. of Phila., 1899	1899	1917
John, Peter, Laurinburg Univ. of Md., 1897	1897	1904
Livingston, Everett Alex., Gibson Univ. of Md., 1912	1912	1913
McLean, Allen, Laurinburg Univ. of Md., 1908	1908	1911
McLean, Peter, Laurinburg Univ. of Md., 1906	1907	1908
Pate, James G., Gibson Univ. of Pa., 1905	1905	1917
Shaw, W. G., Wagram P. & S., Balt., 1892	1895	1904

STANLY COUNTY SOCIETY

President	....	....
Secretary, C. M. Lentz, Albemarle N. C. Med. Coll., 1909	1909	1910
Allen, Jos. A., New London Univ. Coll. of Med., Va., 1901	1901	1904
Anderson, Jasper N., Albemarle Univ. of Md., 1895	1895	1895
Campbell, James I., Norwood Undergraduate N. C. Med. Coll.	1898	1898
Cox, Benj. F., Palmerville Coll. of P. & S., Balt., 1886	1886	1908
Dunlap, Lucius Victor, Albemarle Univ. of N. C., 1909	1909	1910
Hall, Julius Clegg., Albemarle Univ. Coll. of Med. Va., 1890	1899	1908
Hartsell, F. E., Oakboro Balt. Med. Coll., 1895	1895	1902
Hathcock, Thomas A., Norwood Univ. of Md., 1893	1893	1904
Hill, Wm. Isaac, Albemarle Univ. of Md.; Coll. of P. & S., Balt., 1897	1897	1904
Laton, James F., Albemarle N. C. Med. Coll., 1909	1909	1910
Moore, B. B., Badin Univ. Coll. Med. of Va., 1913	1913	1920
Rainey, W. T., Baden	....	1917
Smith, T. A., Baden	....	1920
Whitney, Daniel P., Albemarle, R. No. 3 Univ. of Md., 1889	1890	1898

STOKES COUNTY SOCIETY

President, R. H. Moorefield, Westfield, R. No. 1 N. C. Med. Coll., Charlotte, 1906	1906	1917
Secretary, Reuben G. Tuttle, Walnut Cove N. C. Med. Coll., 1909	1909	1913

Name and Address	*Licensed*	*Joined State Society*
Ellington, J. H., Sandy Ridge P. & S., Balt., 1872	1885	1904
Hanes, J. L., Pine Hall	....	1920
Helsabeck, R. S., Mizpah	....	1920
Hill, L. H., Germanton (Hon.) Jeff. Med. Coll., Phila., 1861	1877	1877
McCanless, W. V., Danbury P. & S., Balt., 1888	1893	1909
Jones, A. G., Walnut Cove Univ. of N. Y., 1868	1894	1904
Shreve, J. R., Germanton	....	1920
Slate, J. W. Walnut Cove	....	1920
Stone, Grady, Tobaccoville, R. No. 1	....	1920

SURRY COUNTY SOCIETY

President, R. E. L. Flippin, Pilot Mountain Balt. Med. Coll., 1892	1897	1901
Secretary, Moir S. Martin, Mount Airy Univ. Coll. of Med., Va., 1905	1909	1916
Ashby, E. C., Mount Airy Univ. of Phila., Pa., 1914	1914	1916
Ashby, Thomas B., Mount Airy P. & S., Balt., 1885	1885	1896
Baird, C. A., Mount Airy N. C. Med Coll., 1904	1904	1912
Bernard, Holman, Pinnacle Med. Coll. of Va., 1912	1914	1919
Flippin, James M., Mount Airy P. & S., Balt., 1884	1884	1910
Flippin, Samuel T., Siloam N. C. Med. Coll., 1898	1898	1898
Gambill, Ira S., Dobson N. C. Med. Coll., Charlotte, 1912	1912	1917
Garvey, R. R. Elkin N. C. Med. Coll., 1915	1915	1919
Hollingsworth, Edward M., Mount Airy Univ. Coll. of Med., Va., 1898	1898	1904
Hollingsworth, Robert E., Mount Airy Univ. Coll. of Med., Va. 1904	1899	1904
Jones, Alex. F., Ararat N. C. Med. Coll., 1915	1915	1917
Lancaster, R. M., Dobson N. C. Med. Coll., 1914	1916	1917
Moore, W. B., Mount Airy P. & S., Balt., 1893	1893	1904
Moorefield, R. H., Westfield N. C. Med. Coll., Charlotte, 1906	1906	1917
Reece, James M., Elkin P. & S., Balt., 1886	1886	1904
Ring, Joseph W., Elkin P. & S., Balt., 1880	1885	1904
Rowe, H. B., Mount Airy Univ. of Md., 1910	1910	1914
Royall, M. A., Elkin P. & S., Balt., 1885	1885	1913
Salmons, H. C., Elkin N. C. Med. Coll., Charlotte, 1904	1904	1908
Smith, James B., Pilot Mountain	1885	1896

Name and Address	*Licensed*	*Joined State Society*
P. & S., Balt., 1884		
Smith, James T., Westfield	1899	1918
N. C. Med. Coll., 1898		
Stone, Wesley M., Dobson	1906	1907
N. C. Med. Coll., 1904		
Taylor, Willim S., Mount Airy	1874	1894
Jeff .Med. Coll., Phila., 1874		
Wellborn, William R., Elkin	1908	1913
N. C. Med Coll., 1905		
Williams, Lester L., Mount Airy	1913	1916
Md. Med. Coll., 1913		
Woltz, John L., Mount Airy	1902	1904
Southern Med. Coll., of Ga., 1897		

SWAIN COUNTY SOCIETY

President	....	....
Secretary	....	....
Bryson, D. R., Bryson City	1900	1904
Univ. of Md.; Coll. of P. & S., Balt., 1900		
Holt, R. D., Cherokee	1911	1964
Med. Coll. of Va., 1899		
Tidmarsh, H. W., Whittier	....	1920

TRANSYLVANIA COUNTY SOCIETY

President	....	....
Secretary	....	....
English, Edwin S., Brevard	1902	1904
Univ. of the South, 1901		

TYRRELL COUNTY SOCIETY

(See Washington-Tyrrell)

UNION COUNTY SOCIETY

President, Romulus Armfield, Marshville	1883	1904
Med. Coll. of Va., 1881		
Secretary, R. L. Payne, Monroe	1911	1912
Tulane Univ., 1911.		
Ashcraft, J. E., Monroe	1887	1890
Univ. of N. Y., 1887		
Fitzgerald, J. Y., Indian Trail	1889	1904
Jeff. Med. Coll., 1889		
Garren, R. H., Monroe	1901	1917
Univ. of Nashville, 1900		
Jerome, James R., Wingate	1890	1904
Med. Coll. of Va., 1890		
Love, William M., Unionville	1915	1919
N. C. Med. Coll., 1915		
McCain, A. W., Waxhaw	....	1920
Nance, George B., Monroe	1885	1904
Jeff. Med. Coll., Phila., 1885		
Neal, John W., Monroe	1887	1904
N. Y. Univ. Med. Coll., 1884		
Perkins, David R., Marshville	1906	1907
Balt. Med. Coll., 1903		
Pruitt, G. C., Monroe	1911	1920
Atlanta Med. Coll., 1911		
Smith, G. M., Monroe	1914	1919
N. C. Med. Coll., 1914		
Stevens, Samuel A., Monroe	1898	1898
Univ. of Md.		

Name and Address	Licensed	Joined State Society
Stewart, H. D., Monroe Univ. of Md., 1898	1898	1904
Whitley, A. D. N., Unionville Univ. of Md., 1897	1897	1904

VANCE COUNTY SOCIETY

President	....	....
Secretary	....	....
Allen, Benjamin G., Henderson Bellevue Med. Coll., 1904	1904	1908
Bass, H. H., Henderson Univ. of Md., 1899	1899	1900
Chapin, Wm. Burdette, Townsville Univ. of N. C., 1909	1909	1910
Cheatham, Goode, Henderson	....	1920
Crews, N. H., Henderson	....	1916
Fenner, Edwin F., Henderson Univ. of Md., 1905	1906	1908
Furman, Wm. H., Henderson Jeff. Med. Coll., Phila., 1910	1910	1912
Harris, F. R. (Hon.), Henderson	1882	1883
MacIntosh, Leland C., Henderson P. & S., Atlanta, 1913	....	1914
Upchurch, Robert T., Henderson Jeff. Med. Coll., Phila., 1908	1909	1910
Wheeler, J. H., Henderson	....	1920

WAKE COUNTY SOCIETY

President, Clarence A. Shore, Raleigh Johns Hopkins, 1907	1909	1909
Secretary, W. C. Horton, Raleigh P. & S., Balt., 1897	1896	1904
Abernathy, Claude O., Raleigh Univ. of N. C., 1906	1906	1907
Adams, R. K., Raleigh Jeff. Med. Coll., Phila., 1912	1912	1916
Anderson, Albert (Hon.), Raleigh Univ. of Va., 1888	1888	1890
Barbee, G. S., Zebulon Univ. of N. C., 1910	1910	1912
Battle, Kemp P. (Hon.), Raleigh Univ. of Va., 1881; Bellevue Med. Coll., 1882	1882	1882
Bell, Carl W., Raleigh Coll. of P. & S., Balt., 1914	1915	1916
Bell, George M., Wakefield P. & S., Balt., 1885	1885	1893
Blalock, Nathan M., McCullers P. & S., Balt., 1890	1890	1904
Buffalo, J. S., Garner Balt. Med. Coll., 1900	1900	1904
Bonner, H. M., Raleigh Med. Coll. of Va., 1897	1897	1918
Burt, Benj. W., New Hill P. & S., Balt., 1886	1886	1904
Campbell, Alton C., Raleigh Univ. of N. C., 1910	1910	1912
Carroll, E. D. Dixon, Raleigh Woman's Med. Coll., 1895	1900	1900
Caveness, Zebulon M., Raleigh Univ. of N. C., 1903	1903	1903

Name and Address	*Licensed*	*Joined State Society*
Cheek, C. E., Fuquay Springs Univ. Coll. of Med., Va., 1912	1912	1914
Cooper, G. M., Raleigh Univ. Coll. of Med., Richmond, 1905	1905	1918
Cozart, W. S., Holly Springs Med. Coll. of Va., Richmond, 1914	1914	1917
Ellington, A. J., Raleigh Columbia Univ., 1915	1915	1917
Finch, O. E., Apex Jeff. Med. Coll., Phila., 1915	1915	1917
Fowler, M. L., Zebulon Coll. of P. & S., Balt., 1881	1881	1904
Freeman, R. H., Raleigh Jeff. Med. Coll., 1908	1908	1919
Gibson, M. R., Raleigh Univ. of N. C., 1905	1905	1914
Goodwin, A. W., Raleigh (Hon.) Bellevue Med. Coll., 1887	1887	1887
Greenwood, A. B., Raleigh Johns Hopkins, 1916	1916	1918
Harper, J. M., Holly Springs	....	1911
Haywood, F. J., Raleigh (Hon.) Bellevue Med. Coll., 1868	....	1871
Haywood, Hubert B., Raleigh Univ. of Pa., 1909	1909	1910
Haywood, Hubert (Hon.), Raleigh Bellevue Med. Coll., 1879	1879	1879
Hester, J. R., Knightsdale Univ. of N. C., 1910	1910	1912
Horton, M. C., Raleigh Univ. Coll. of Med., Va., 1903	1911	1911
Jenkins, Charles L., Raleigh N. Y. Univ. Med. Coll., 1890	1890	1894
Johnson, Robert Wade, Apex Univ. of Tenn., 1900	1901	1904
Jordan, Thos. M. (Hon.), Raleigh P. & S., Balt., 1881	1881	1882
Judd, Eugene C., Raleigh Univ. of Pa., 1911	1911	1912
Judd, James M., Cardenas Balt. Med Coll., 1897	1899	1901
Knox, Augustus W., Raleigh (Hon.) Bellevue Med. Coll., 1874	1878	1880
Lawrence, B. J., Raleigh	....	1920
Lewis, Richard H., Raleigh (Hon.) Univ. of Md., 1871	1877	1900
Lowery, John R., Raleigh Univ. of Md., 1904	1904	1913
McCullers, James J. L., McCullers P. & S., Balt., 1886	1886	1893
McDowell, F. C., Zebulon Univ. of Pa., 1902	1913	1916
McGee, James Wm., Raleigh Bellevue Med. Coll., 1888	1888	1891
McKee, John S., Raleigh Univ. of Md., 1907	1908	1909
Noble, R. P., Raleigh Univ. of N. C., 1907	1907	1916
Pendleton, A. S., Raleigh Univ. of Pa., 1905	1898	1913
Proctor, I. M., Raleigh Univ. of N. C., 1913; Univ. of Pa., 1915	1915	1917

Name and Address	*Licensed*	*Joined State Society*
Rankin, Watson S., Raleigh Univ. of Md., 1901	1901	1901
Ray, O. L., Raleigh, R. No. 1 Univ. Coll. of Med., Va., 1899	1899	1904
Riggsbee, A. E., Morrisville Univ. of N. C., 1909	1909	1911
Rogers, Jas. Rufus, Raleigh P. & S., Balt., 1886	1886	1904
Root, Albert S., Raleigh Univ. of Pa., 1911	1911	1913
Royster, Hubert A., Raleigh Univ. of Pa., 1894	1894	1895
Royster, W. I. (Hon.), Raleigh Bellevue, N. Y., 1869	1869	1874
Sorrell, L. P., Raleigh, R. No. 6 Med. Coll. of Va., 1875	....	1904
Stancell, Wm. W., Raleigh Univ. Coll. of Med., Va., 1906	1906	1914
Tampleton, James M., Cary Balt. Med. Coll., 1882	1882	1893
Thompson, Hugh A., Raleigh Univ. of Pa., 1914	1914	1917
Thompson, S. W., Sr., Neuse Med. Coll. of Va., 1875	....	1904
Turner, Henry Gray, Raleigh Univ. of Pa., 1906	1907	1910
Underhill, Henry P., Wendell Univ. Coll. of Med., Richmond, 1901	1901	1906
Washburn, B. E., Kingston, Jamaica, Box 259 Univ. of Va., Charlottesville, 1911	1912	1917
Watson, John B., Raleigh Univ. of N. C., 1908	1908	1909
West, Louis N., Raleigh Jeff. Med. Coll., Phila., 1912	1912	1915
Wilkerson, Charles B., Apex Univ. of N. C., 1906	1906	1908
Wilkerson, T. E., Apex Univ. of Pa., 1914	1914	1916
Wright, J. B., Raleigh Univ. Coll. of Med., 1899	1899	1909
Young, L. B,, Rolesville P. & S., Balt., 1886	1886	1906

WARREN COUNTY SOCIETY

President, P. J. Macon, Warrenton Univ. of Md., 1883	1883	1883
Secretary, C. H. Peete, Warrenton Univ. of Pa., 1903	1906	1911
Holt, T. J., Warrenton Med. Coll. of Va., 1904	1904	1911
Horton, Howard M., Macon Med. Coll., Va., 1916	1916	1920
Macon, G. H., Warrenton Univ. Coll. of Med., Va., 1910	1910	1911
Norton, N. D., Norlina Univ. Coll. of Va., 1909	1909	1915
Perry, Mark P. (Hon.), Macon P. & S., Balt., 1884	1884	1884
Rodgers, W. D., Jr., Warrenton Jeff. Med Coll, Phila., 1913	1913	1915

WASHINGTON-TYRRELL COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President, William H. Hardison, Creswell	1871	1890
Washington, Univ. of Md., 1870		
Secretary, W. H. Ward (Hon.), Plymouth	1886	1886
Univ. of Md., 1881		
Bray, T. L., Plymouth	1916	1920
Univ. of Md., 1916		
Combs, Howard J., Columbia	1918	1919
Jeff. Med. Coll., 1918		
Flowers, Clarence A., Columbia	1907	1910
P. & S., Balt., 1905		
Halsey, Benj F., Roper	1894	1894
Vanderbilt Univ., 1893		
Hassell, Jas. L., Creswell	1886	1904
Coll. of P. & S., Balt., 1886		
Mariner, N. B, Belhaven	1903	1903
Univ. Coll. of Med., Va., 1903		
Speight, John W., Roper	1885	1904
Ky. School of Med., 1885		
Spruill, Jos. L., Sanatorium	1895	1907
Univ. of Md., 1895		

WATAUGA COUNTY SOCIETY

(See Mitchell)

WAYNE COUNTY SOCIETY

President, Wm. H. Smith, Goldsboro	1907	1912
Univ. of Pa., 1906		
Secretary, Charles F. Strosnider, Goldsboro	1908	1916
Univ. of Md., 1909		
Bizzell, Thomas M., Goldsboro	1908	1916
Univ. of Md.. 1908		
Butler, Humphrey, Goldsboro	....	1920
Cobb, Wm. H., Jr., Goldsboro	1889	1890
Jeff. Medical Coll., Phila., 1889		
Crawford, Wm. B., Goldsboro	1886	1904
Bellevue Hops., N. Y., 1886		
Daniels, O. C., Goldsboro	1903	1916
Med. Coll. of Va., 1903		
Eason, Oscar, Goldsboro	1910	1911
Univ. of N. C., 1910		
Faison, Wm. W. (Hon.), Goldsboro	1883	1883
Jeff. Med. Coll., 1878		
Ginn, Theo L., Goldsboro	1901	1904
Med. Coll., of Va., 1901		
Henderson, C. C., Mt. Olive	1914	1919
Univ. of Md., 1914		
Irwin, Henderson, Eureka	1914	1916
Univ. of Md., 1912		
Ivey, H. B., Goldsboro	1911	1917
Univ. Coll. of Med., Richmond, 1911		
Jones, Clara E., Goldsboro	1894	1897
Woman's Med. Coll. of Pa., 1894		
Lassiter, C. L., Fremont	1915	1918
Jeff. Med. Coll., 1915		
Miller, Robert B., Goldsboro	1900	1902
Med. Coll. of Va., 1898		
Moore, J. E., Mt. Olive	....	1918
Morris, George B., Mt. Olive	1910	1912
Univ. of Md., 1910		

Name and Address	*Licensed*	*Joined State Society*
Patrick, Jas. E., Seven Springs Univ. Coll. of Med., Richmond, 1900	1900	1917
Person, Edgar Cooper, Pikeville Med. Coll. of Va., 1904	1904	1908
Person, H. M., Goldsboro N. C. Med. Coll., 1913	1913	1916
Smith, R. A. (Hon.), Goldsboro Vanderbilt Univ., 1879	1882	1887
Spicer, John, Goldsboro Bellevue Med. Coll., 1889	1890	1904
Spicer, Richard W., Goldsboro N. C. Med. Coll., 1910; Univ. of Penn., 1911	1910	1916
Steele, William C., Mt. Olive Univ. of Md., 1894	1891	1894
Sutton, William G., Seven Springs Jeff. Med. Coll., 1889	1889	1896
Whelpley, Frank L., Goldsboro Washington Univ., St. Louis, 1902	....	1918
Wilkins, John W., Mount Olive Med. Coll. of Richmond, Va., 1913	1913	1917

WILKES COUNTY SOCIETY

President	....	....
Secretary	....	....
Duncan, Julian E., Houston, Texas Univ. Coll. of Med., Richmond, 1907	1907	1908
Gilreath, Frank H., N. Wilkesboro Univ. of Nashville, 1898	1898	1898
Horton, W. P., N. Wilkesboro Balt. Med. Coll., 1892	1898	1904
Hutchins, E. M., N. Wilkesboro N. C. Med. Coll., Charlotte, 1896	1896	1904
Pegram, R. W. S., Canton Balt. Med. Coll., 1892	1894	1907
Sink, C. S., Wilkesboro N. C. Med. Coll., 1912	1912	1913
Somers, L. P., New Castle Univ. of Md., 1897	1889	1904
Triplett, W. R., Purlear	....	1920
Turner, J. M., N. Wilkesboro Univ. of Louisville, 1881	1885	1896
White, John W. (Hon.), Wilkesboro Jeff. Med. Coll., Phila., 1889	1889	1890

WILSON COUNTY SOCIETY

President, Ben. J. Hackney, Lucama Tulane Univ., 1911	1911	1913
Secretary, Ernest L. Strickland, Wilson Med. Coll. of Va., 1916	1916	1917
Anderson, Wade H., Wilson Univ. of Va., 1902	1904	1904
Anderson, Wm. S., Wilson Washington Univ., Balt., 1896	1880	1900
Barnes, Benj. F., Elm City Univ. of Md., 1902	1902	1902
Best, Henry B., Wilson Univ. of N. C., 1907	1907	1908
Brooks, G. M., Elm City Jeff. Med. Coll., 1918	1919	1919

Name and Address	*Licensed*	*Joined State Society*
Dickinson, Elijah T., Wilson Med. Coll. of Va., 1895	1895	1900
Eagles, Charles S., Wilson, R. No. 4 Univ. of N. C., 1909	1909	1910
Foster, J. F., Bailey N. C. Med. Coll., 1916	1916	1919
Grady, Leland V., Wilson, R. No. 2 N. C. Med. Coll., 1914	1913	1914
Herring, Benj. S., Wilson Univ. of Mich., 1900	1901	1901
Johnston, R. H., Wilson Univ. of Md., 1894	....	1919
Lamm, Isaac W., Lucama Univ. Coll. of Med., 1899	1899	1900
Lane, P. P., Wilson	....	1920
Lewis, Geo. W., Wilson Univ. of Md., 1886	1885	1894
McClees, Ed. C., Elm City	....	1920
Mitchell, Geo. W., Wilson	....	1920
Moore, Charles E., Wilson (Hon.) Bellevue Med. Coll., 1875	1875	1875
Moore, Edwin G., Elm City (Hon.) Univ. of Md., 1883	1883	1890
Moore, K. C., Wilson Univ. of Mich., 1909	1909	1910
Person, T. E., Stantonsburg N. C. Med. Coll., 1911	1911	1914
Powell, H. H., Stantonsburg N. C. Med. Coll., 1911	1911	1914
Putney, R. H., Elm City	....	1920
Saliba, Michael M., Wilson Balt. Med. Coll., 1897	1910	1910
Smith, G. A., Black Creek Louisville Med. Coll., 1887	1893	1882
Smith, L. J., Wilson Jeff. Med. Coll., 1912	1918	1918
Williams, Alfred F., Wilson Univ. of Md., 1901	1901	1904
Woodard, C. A., Wilson	....	1920

YADKIN COUNTY SOCIETY

President	....	....
Secretary	....	....
Bryant, Charles G., Jonesville Louisville Med., Coll., 1894	1902	1904
Couch, V. T., Yadkinville Columbia Univ., 1910	1910	1919

YANCEY COUNTY SOCIETY

President	....	....
Secretary	....	....
Gibbs, J. B. Burnsville Lincoln Mem. Univ., 1901; N. C. Med. Coll., Charlotte, 1904	1904	1919
Peck, W. A., Ramseytown	....	1919
Robertson, W. B., Burnesville Balt. Med. Coll., 1898	1908	1908

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TRANSACTIONS

OF THE

North Carolina Health Officers Association

Tenth Annual Session

Charlotte, North Carolina
Monday, April 19, 1920

Transactions of the North Carolina Health Officers' Association

TENTH ANNUAL SESSION.

The Health Officers' Association met on Monday morning, April 19, 1920, at the Y. M. C. A., Charlotte, and was called to order by the President, Dr. E. F. Long, Lexington.

INVOCATION.

Mr. J. Wilson Smith, state secretary, Y. M. C. A., Charlotte:

Our Heavenly Father, we thank Thee for the privilege we have of coming to Thee with all our problems, and finding in Thee the solution to all difficulties and undertakings. We pray that Thou wilt bless this assembly of men who have, as their hearts' interest, the prohibition of the health of the men and boys and women and girls of the great State of North Carolina. We thank Thee, our Heavenly Father, for men who give their lives unselfishly in this service, and we pray that from the deliberations of this conference, and out of the topics discussed here, there may come to this State renewed life and renewed vigor, and that this gathering may be a blessing which will be felt to the remote corners of the State. We thank Thee for the way that Thou hast brought this State forward to take the lead in service for the uplift of men. We pray Thy blessing upon this State, upon its Governor, upon all its officers. We pray Thy blessing upon our Nation in these days of perplexity and trial, in these days of uncertainty and unrest, in these days of turmoil and strife. Help us to realize that the only solution of these difficulties is the religion based upon the teachings of our Lord Jesus Christ, that in Him we have a source of strength equal to any condition which may confront us. We pray that Thou wilt strengthen our faith in those things which are fundamental and eternal.

We ask these things in the Name and for the sake of Jesus Christ, our Savior, whom we love and to whom we have given our lives in service. Amen.

Dr. Long, President:

Before beginning the program, I am going to announce one committee, in order that they may be looking after the committee's work—a Committee on Visitors and New Members. I will appoint on this committee Dr. A. J. Warren, Dr. F. M. Register and Dr. W. M. Jones. The duties of this committee will be to receive visitors, secure new members and properly introduce visitors and new members to the meeting.

"CO-ORDINATION OF HEALTH WORK—INTRA-GOVERNMENTAL AND EXTRA-GOVERNMENTAL."

ANNUAL ADDRESS—E. F. LONG, M. D., PRESIDENT.

History will probably record the twentieth century as the beginning of the public health era.

While Moses established certain practices calculated to prevent the spread of infectious diseases, based on scientific principles, relating especially to

isolation and disposal of excreta, during the march of the children of Israel through the Wilderness more than thirty-five hundred years ago, only desultory efforts to control devastating epidemics were undertaken until the latter part of the nineteenth century.

After the invention of the microscope, bacteriological investigations gradually awakened an increaing interest in the dissemination of infectious diseases. The possession of definite knowledge concerning the character of infective agents stimulated studies in research work which resulted in tracing offending organism from origin to host.

Regulations were adopted requiring isolation of persons sick with contagious diseases and limiting communication of contacts. Vaccine therapy and improved methods of sewage disposal engaged the profound consideration of scientists. Attention was soon directed to the necessity of ascertaining and correcting physical defects of childhood. This subject naturally includes the fertile field of eugenics, pre-natal and child welfare work. Prevention of occupational and degenerative diseases is recognized as an urgent necessity. These examples are sufficient to illustrate the broadening field of recognized public health requirments.

Heretofore both professional and public interest has been attracted principally to the prevention of disease. A broader conception of the possibilities of human development is being presented in the basic principle of health promotion.

In retrospect, it seems, almost, that a great vista of unrecognized perquisites has been denied humanity, so vast in its perspective that it appears as a gorgeous panorama of wasted opportunity.

When we consider that upon the physical welfare of the individual depends in large measure the material, moral and spiritual welfare of the community, we begin to realize the vital necessity of harmonious, systematic organizational unity in public health activities.

To physicians and investigators of related sciences is due the credit of practically all investigational work required to establish the principles and correlate the relative values of health protective measures.

It is a sad commentary on the medical profession that, although its productive capacity is commendable, the distribution of its product to the citizenship has proven inadequate.

So great, indeed, has been the demand for the preventive health product that almost innumerable individuals, societies, associations and other agencies have been assiduously engaged in delivery of this priceless possession, sometimes in a more or less damaged condition.

The ethical training of the physician, is professional desire to prove that which is worthy, his ambition to improve that which is acceptable, his scientific caution to weigh on the balanced scales of careful analysis every venture into the untried fields of experimental effort, militate against his success as a propagandist.

Therefore, an individual type of specially qualified physician is being selected and trained as an important element in the rapidly developing science of preventive medicine. Gentlemen, the health officer!

As in the development of every science, the basic facts must be established

beyond peradventure of doubt. The essential principles of this new science must include every requirement and condition actively or remotely affecting the physical and mental welfare of the human race.

In establishing a well ordered system of health conservation, the essential factor of scientific conservatism has been to some extent ignored by an impatient public. Facilities for training a sufficient corps of capable professional administrative officers has interfered materially in proper organizational effort.

The necessity of supporting arguments for appropriation of necessary funds for initiating and maintaining adequate health departments by an undisputed record of achievement has aided in making secure the position of well organized departments of health. At the same time, satisfactory development in keeping with the progress of scientific public health achievement as a well organized and properly related governmental function has been realized.

The conservatism of physicians, whose almost immemorial function has been the treatment of disease, has permitted the aggrandizement of much of their hard-earned knowledge of the science of preventive—and, I almost added, promotive-medicine, by less capable, non-scientific administrative agencies.

The fertile field of preventive medicine is intimately related to every phase of human endeavor and environment.

Can blame attach to individuals and organizations for taking advantage of neglected opportunities to administer functions of a purely scientific character, even though these promoting agencies are possessed of no scientific training or ability?

STATE, COUNTY AND CITY PUBLIC HEALTH ORGANIZATIONS.

The organization of most of the pioneer state health agencies were hastily conceived and designed to afford protection against some particularly devastating epidemic. Plans were adopted to meet the apparent immediate needs without provision for orderly development into comprehensive, co-ordinating, effective units of service to the citizenship comparable in importance with the legislative, judicial and educational functions of governments.

Succeeding state organizations were largely modeled after the plans previously adopted by neighboring states.

Efforts to reorganize state health agencies according to the modern conception of public health requirements have proven particularly difficult.

No state has succeeded in establishing a co-ordinating public health agency of such character and proportions as to serve as a model. Nor has any health organization sufficient available funds to secure and equip a corps of qualified experts to undertake a systematic study of all the factors necessary to ascertain the essential information to serve as a basis for such comprehensive effort.

The diversity of plans of organization, functions, and limitations of the various intra-governmental state health agencies clearly indicate that both professional and popular opinion differs radically as to what should and

what should not constitute the primary functions of public health agencies. Functions considered by some state health agencies as of paramount importance are utterly disregarded by others.

Units of work regarded by some authorities as primarily essential to the proper functioning of a state health organization are ignored by others, or permitted to be administered by agencies whose avowed purposes are utterly foreign to the administration of public health activities.

Most city and county public health organizations were conceived as a result of temporary enthusiasm, rather than of deliberate planning. Few have had the benefit of systematic, orderly planning by men fitted by training and experience, as is customary in organizing industrial enterprises. The first health officer is usually chosen because of political preferment, popularity as a practicing physician, or because he is the cheapest bidder, regardless of his adaptability on these factors. Precedent is quickly established and public opinion judges the worth of all public health activities throughout succeeding administrations largely by the measure of success of the initial effort.

Discrepancies in the conception of relative values of public health functions are more glaringly apparent in city, town and county public health activities than in the state organizations.

The relations between the state health organizations and the city and county departments are as varied as the geographical boundaries of the territory involved. In no state is there a comprehensive program of public health administration, embracing a scientific adjustment of the state, county, city, town and rural prerogatives, founded on the basic principle of real and relative values, ascertained through the means of a thorough survey of actual health conditions and requirements.

The co-operative state-county plan of public health work, which is being rapidly systematized in North Carolina, embracing in most co-operating counties the city, town and rural phases of work, is probably the most striking example of unified and properly correlated organizational effort.

NATIONAL GOVERNMENTAL PUBLIC HEALTH ORGANIZATIONS.

The United States Public Health Service, a bureau of the Treasury Department, developed from the Marine Hospital Service, is the most conspicuous portion of the governmental health organization.

The United States Public Health Service has a central bureau in Washington with seven divisions, namely:

1. Personnel and Accounts
2. Foreign and Insular Quarantine and Immigration
3. Domestic (Interstate) Quarantine and Sanitation
4. Sanitary Reports and Statistics
5. Scientific Research
6. Marine Hospitals and Relief
7. Miscellaneous.

The classification of the divisions of the Public Health Service indicates in a general way the functions and limitations of the bureau.

The Public Health Service is also authorized to co-operate with state

and local public health authorities in the control and suppression of epidemics and to act in public health matters bearing on interstate commerce.

The Children's Bureau of the Labor Department is authorized by law to investigate and report on all matters pertaining to the welfare of children. This bureau administers the Child Labor Law, conducts investigations and publishes reports and pamphlets.

The Bureau of Chemistry of the Department of Agriculture, the Division of Vital Statistics of the Bureau of the Census, and the Bureau of Animal Industry of the Department of Agriculture also administer quasi health functions.

The Chairman of the Appropriations Committee of the Lower House of Congress was recently quoted as saying: "Today duplication in the government service abounds on every hand. Forty-two different organizations, with overhead expenses, are dealing with the question of public health."

EXTRA-GOVERNMENTAL PUBLIC HEALTH ORGANIZATIONS.

The American National Red Cross Society is the most conspicuous and successful extra-governmental public health agency. Organized for the purpose of nursing and caring for sick and wounded soldiers in time of war, its effectiveness was so marked that it quickly expanded into a comprehensive relief agency. Operating through its well manned and equipped central and local organizations; radiating into every section of the United States, even serving stricken and destitute peoples of many foreign nations; supported by popular subscription and controlled by a directorate consisting of government officials, professional men and laymen, the President of the United States of America being the titular head of the organization, it assumes responsibility in large part for the physical and moral welfare of the army in war time.

This powerful relief organization, whose activities embrace certain public health functions, responds to distress calls in every section. Acting in harmony with national, state and local governmental authorities, it is both a popular and semi-governmental organization.

Limitation of time and space forbids enumeration of the many extra-governmental public health agencies. Suffice it to say that the activities of practically all of them are devoted to some particular phase of public health endeavor. An effort to organize state and local societies subordinate to the national organization is the usual plan of procedure.

The organization of most of this group of societies resulted from the active interest of small groups of individuals, consisting principally of social workers. Their effectiveness is curtailed by reason of limited membership.

A recent tabulation by an official of the American Medical Association reveals the astonishing fact that there are now fifty-seven extra-governmental public health agencies of national ambition.

SUMMARY.

The existence of such a large number of governmental and extra-governmental public health organizations denotes a wide-spread popular interest in the physical welfare of the citizenship.

This situation also indicates the absence of any powerful scientific coordinating public health agency.

The multiplicity of organizations, the complexity of avowed purposes, the varied estimate of relative values, the intimate relation of human efficiency and average longevity to every condition and requirement of human endeavor, environment and association directs attention to the vital necessity of unifying and coordinating the public health forces of the nation.

Notwithstanding that there are forty-two governmental and fifty-seven extra-governmental national public health organizations, making a total of 99, and the single semi-governmental agency, the American National Red Cross Society, rounding out an even hundred, yet there is no organized agency for the study, collection and distribution of knowledge on health conservation and promotion!

Each state organization is, therefore, compelled to largely dissipate its energies in an attempt to cover the whole field of investigation, preparation and distribution of literature and exhibit material and many other phases of work, common to all and for which standard forms and material should be provided by an accredited co-operating national public health agency.

In addition, the state and local organizations are constantly solicited to furnish data, material and energy to further the cause of the aggressive national organizations for specific purposes, often at inconvenient seasons, and for which no funds are provided, nor credit secured.

What a striking example of duplication of effort, overlapping and divergence of opinions and methods!

Most of the voluntary health organizations are the result of chance. Much of the information distributed by them is ill-considered, some of it contradictory and confusing.

Does the result justify the means? The public pays the bills. What does the public get for its money?

Should a citizen desire to offer a comprehensive program of public health administration for adoption by his city, town or community, embracing the best available practices of established value for protecting, promoting and developing the physical well-being of every individual of his community, together with a carefully estimated per capita cost, methods of procedure, personnel of department, functions, powers, limitations and a scientifically adjusted system of relative values, to which of the national governmental or extra-governmental organizations should he apply?

What state has an organization capable of furnishing the desired information?

Has any city or county developed a public health organization approaching in a well marked degree of effectiveness the essential requirements of the citizen's program?

After diligent inquiry from every available source, the interested citizen would probably conclude that his country possesses a heterogeneous conglomeration of public health agencies, all of whom maintain a costly personnel of more or less capable administrative officials whose energies are largely expended in effecting, financing and maintaining the individual organizations; whose activities are limited by reason of the necessity for promoting the particular objects for which they have assumed responsibility.

Many apparently vying with all others in an endeavor to win most popular favor. All apparently convinced that the subject of their particular objective is of paramount importance. None apparently capable of developing into a powerful, cohesive, effective unit of such character and influence as to include all of the many interrelated but essential requirements of a national public health agency, radiating through legitimate channels into and successfully co-operating with all of the political subdivisions of the nation.

Efforts of governmental as well as voluntary public health agencies have been too largely directed toward eradicating or suppressing diseases. Most of the voluntary agencies devoting their attention to amelioration of a single disease or condition.

Too little attention has been devoted to ascertaining and correcting the influences which are directly or remotely responsible for these diseases and conditions. This subject involves consideration of the scientific, economic, sociologic and legal requirements and limitations.

If all the individuals of a community were properly nourished, clothed and housed, and the environment, working conditions, provisions for recreation and adequate sleep and rest scientifically adjusted, such diseases as tuberculosis would be negligible.

CONCLUSIONS.

1. Appreciable results have been achieved in the campaign against specific diseases.
2. The plan of campaign has not been sufficiently inclusive, cohesive nor co-operative.
3. Public appreciation of existing health conditions and requirements is being intelligently manifested.
4. Physicians were primarily responsible for the development of public health sentiment. Sociologists and philanthropists have contributed materially to the resulting achievement in public health endeavor.
5. In order to accomplish the end results desired, amalgamation and coordination of the public health forces is essential.
6. Any proposed plan should include active participation of the individual citizen to whom the benefits ultimately accrue.
7. The ideal: A powerful co-operative, coordinating public health organization, be it governmental, semi-govermental, or extra-governmental, creating, absorbing, digesting and dispensing unprejudiced, trustworthy information concerning every phase of the science of health; principles, practice and administration. Commanding the respectful confidence of the public. Co-operating in an intelligent, mutually helpful manner with the state agencies whose properly correlated, systematic organizations radiate into every county, city, town, hamlet and remote country community of the nation.

REPORT OF SECRETARY-TREASURER OF THE NORTH CAROLINA HEALTH OFFICERS' ASSOCIATION FOR YEAR ENDING APRIL 1, 1920

Dr. G. M. Cooper, Raleigh.

Balance brought forward from 1919, $25.36. Savings Bank interest, 91 cents. Total, $26.27. Total receipts for the year, nothing. Grand total,

$26.27. Disbursements: Postage on 200 letters mailed, $4. Multigraphing copies of program, circular letter and clerical hire for mailing out letters, $12.27. Printing 200 postal cards, $4. Janitor for meeting hall, $6. Total disbursements, $26.27. Balance on hand, nothing.

I wish to express deep appreciation to the newspapers of the State for the notices concerning our meeting, and the Medical Society of the State of North Carolina for furnishing us with a stenographer to report our meetings at Pinehurst last year, and for publication of the proceedings of our meeting in the Annual Transactions.

This being the tenth annual session of this Association, a word concerning the history of the first decade of its existence might be considered in order. This Association was organized and held its first meeting in the amphitheater of the old North Carolina Medical College here in the city of Charlotte on June 19, 1911. The progress that North Carolina has made in public health work during these years is nothing short of marvelous. At that time there was not a single whole-time health officer in a city or county of North Carolina. The nearest approach was the action of the city of Wilmington, some time just before that meeting, in the employment of a physician for his whole time, chiefly to enforce the quarantine against smallpox and to vaccinate the school children of the city, where they had a severe epidemic at the time. The chief occupation of every county physician and every city physician in the State was treating paupers, quarantining against smallpox and trying to decide which was the best and cheapest method of fumigation, or at least to determine which would smell the worst. Other more or less police duties were charged up to the officials of the different health departments in that day. Smallpox vaccine sold, even to county physicians, at 10 cents per tube. Diphtheria antitoxin cost the county physicians, as well as other physicians, $7.50 for 5,000 units. No such thing as vaccination against typhoid fever had been discussed by the average physician at that time. The State Sanatorium for Tuberculosis was being bandied about from one bunch of politicians to another with the resulting incompetency and inefficiency that might have been expected from such management. The average practicing physician in North Carolina who did not treat at least fifty cases of typhoid fever each year with the loss of about five or more was considered down and out and his practice all lost. The State had never heard of the registration of the births and deaths except through a toy law concerning a few of the cities and larger towns, which was not even expected to be enforced. The State Board of Health consisted chiefly of the Secretary, his chief assistant and a stenographer or two, and the work of Dr. Shore and about one or two assistants in the laboratory. The man who dared to go out and preach public health and the necessity for counties and cities, paying attention in a business-like manner to the multitude of questions arising in which the public was vitally concerned, was regarded as a crank, a fanatic or an ordinary job hunter. I mention these things especially for the contemplation of the newer men who now constitute the bulk of the membership of this Association. There are several of the older "standbys" here who were present at the first meeting, some of whom have never missed a meeting since. Some of them and others have got the reward that is generally in store for most people who serve the public, in that they have been kicked out of office after devoting many years

of service for the people instead of making money for themselves. Many of us, however, are still allowed the bare necessities of life and an occasional grudging vote of thanks for the work that we have been trying to do through all these nine years.

This Association has been a common meeting ground and a clearing house for the dissemination of the best information available on live public health topics, and I am proud to say that our stand has generally been an advanced one, and that as a whole we may be considered as having been always in the vanguard of progress. I need not call attention to any contrast in conditions today as compared with those of nine years ago. "He who runs may read." I would like to urge, instead of retrospection, that we map out the new campaign far in advance, because there is an abundance of work to be done and the public is by no means unanimous in its support of the efforts we are making; and to the newer men who are here representing counties I would like to urge that you never let for one minute the idea obsess you that you have a good job and that your chief duty is to hold that job; but I would like to urge that your motto should be service to the most people, regardless of consequences to yourselves. I hope you will pardon me for assuming to hand out this bit of brotherly advice. I take this liberty because I feel that I have been knocked and kicked and bumped by practically everybody in the State of North Carolina that could possibly get up energy enough to afford a knock or a kick or a bump, and that I can speak with authority as one who had had ample experience, and as such, I would like to warn you that those are the things that you may expect. Your reward must be in the performance of duty, with your chief object the saving of human lives and increasing comfort, happiness and prosperity on the part of all the people whom you are serving.

Dr. Long, President:

In addition to the Committee on Visitors and New Members which was appointed a few minutes ago the following committees are appointed:

Auditing Committee:

Dr. A. Cheatham
Dr. A. C. Bulla
Dr. C. Daligny

Committee on Resolutions:

Dr. R. L. Carlton
Dr. J. S. Mitchener
Dr. C. W. Armstrong

Dr. Long, President:

We are honored today by the presence of a very distinguished visitor, Dr. Charles V. Chapin, of Providence, Rhode Island. Dr. W. S. Rankin, Secretary of our State Board of Health, will formally introduce Dr. Chapin to the meeting.

Dr. Rankin:

Ladies and gentlemen, if you will look at the program you will see that our theme this morning is largely that of the Relative Values of Health Problems, and speaking of values, it is my very great pleasure to present

to you a man who has been of great value to our State, perhaps of more value than most of us realize. This man has saved you and your State not less than $100,000, and I think, as I do always when I am speaking of values in health work, that that is away under the real value.

North Carolina is handling each year 30,000 cases of infectious and contagious diseases. That is the number reported. If we had been following along in the old, beaten track, and had been burning formaldehyde after infections, we would have been spending at least $30,000 a year for the past several years. Be it said, to the credit of the State, that disinfection as we used to know it has not existed in North Carolina for five years, and five times $30,000 is $150,000. But I will reduce the figures somewhat, and say that the man whom I shall present to you has saved this State not less than $100,000. But that is the smaller part of the saving because this man has not only torn something down—the false thing—but he has substituted for it the true and valuable practice of regarding the person, and not things, as the source of infection. So I do not know what he has saved in human lives.

If one looks back over the last five or ten years of public health work, I think one of the most distinct impressions one gets is that of the tremendous amount of general interest in public health. Everyone is getting interested in some phase of the public health problem. That is the explanation of all these organizations referred to in the President's address. Someone gets interested in cancer and organizes a cancer society. Another is interested in social hygiene, and organizes a social hygiene association. And so we have become divided into so many fractions that we are losing the strength of a united movement. This has come about through lack of a sense of proportion, of a sense of relative values. It is no longer sufficient to recognize a public health problem as an important one, but we have to relate that problem to all other public health problems, because the resources—the funds for dealing with public health work—will always be limited. With a limitation of resources, the wise man will pick out the most profitable thing on which to spend his money. So the advance in the next ten years will be along lines of relative health values. We are fortunate in having with us today the man who has given more thought to this problem than any other man in the country. It was when he began to question the value of fumigation that he entered into the study of relative values in health work. This man is an expert on relative values. He has, in my judgment, contributed more to the symmetrical development of health work than any other man. I know that you all know him by reputation, and I want you to know him personally.

I present Dr. Charles V. Chapin, of Providence, Rhode Island.

Dr. Charles V. Chapin, Providence, R. I.:

It is worth coming to North Carolina to be introduced by Dr. Rankin, but I like North Carolina, because it is so attractive, and I like to visit a State so progressive in health matters. To come from a city which cut down the health appropriation $14,000 and to a state which has done the things which this state has done, is a great pleasure. Another reason why I wanted to come was to have a chance to have a chat with the most stimulating and progressive health officer in the United States, Dr. Rankin.

Your President has touched upon most of the features which I was going to talk about today, and so has your Secretary-Treasurer. There are various reasons why we lack perspective in health work, and one of the chief reasons is that health officers do not take the trouble to think. It is so easy to follow in the footsteps of others. Like your Secretary, I, too, years ago devoted a good deal of time to thinking how to get the best fumigation for killing contagious diseases. It was ten years or more before it occurred to me to inquire whether we needed fumigation. It is so easy to be conservative, and that is why we do a great many things which do no good, and then we have no money to do the things which are good.

I am sometimes considered a kicker, but I am not so much a kicker as I am a questioner. It is desirable to be sure if possible before going ahead. Thus vaccination against diphtheria promises well and there is nothing inherently dangerous about it. Yet clinical data as to its effectiveness are not very extensive, and bad results have been produced by carelessness. I have hesitated to urge it in a wholesale way until we have had a larger experience.

Another reason why we do not do better in health work is because of

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RELATIVE VALUES OF MILK.

Vital Statistics		60
Education		80
Laboratory		50
Control of nostrums		50
Care of sick poor		50
Food	(Adulteration)	0
	(Sanitation)	17
Milk	(Alulteration)	3
	(Sanitation)	3
Nuisances	(Privy sanitation)	60
	(Housing)	20
	(Plumbing)	10
	(Nuisances)	10
	(Refuse removal)	0
	(Fly and mosquito control)	10
Infant mortality	(Nurses)	80
	(Supervision of midwives)	10
	(Babies' boarding houses)	5
	(Milk stations)	5
	(Consultations)	20
	(Pre-natal clinics)	10
School inspection		80
Contagious Diseases	(Home isolation)	100
	(Hospitalization)	50
	(Immunization)	50
	(Venereal diseases)	20
Tuberculosis	(Nurses)	60
	(Dispensaries)	40
	(Hospitalization)	40
		1,000

organization. Organization is a necessary evil. We are very apt to organize, and when the machinery gets to work about all it manufactures is red tape. I was, recently, at a meeting of a national association dealing with public health, and we talked all day. We talked about salaries, and by-laws and secretaries and state organizations, and not a word was said about the causation and prevention of disease. That is the way with organizations— we are very likely to let the organization run away with us. We forget that our purpose is to prevent sickness and defer death. We are prone to tell how many letters were written, how many nurses we have at work, how many visits were made, etc. What we should show is how much sickness prevented, how many lives saved. We must see that our work does accomplish something.

Another reason why our health departments are not as good as they should be was touched upon by your President, and that is that they are very rarely planned on general principles and with a broad view to start with. They start in a small way, and are added to little by little in a haphazard fashion. One reason is that the health officer is overridden by outside influences. We have had an instance of that in Providence lately. An article on the floating hospital for babies in Boston appeared in a health bulletin. Some of our philanthropic women were greatly impressed and made up their minds we needed one, though I advised that its value is questionable. We have the hospital and much money is spent on it for small results, though the same amount spent on baby nurses would yield large and definite results in lives saved.

City councilmen and state legislators often introduce "health measures" and perhaps secure their passage, without consulting the health officer, lest they lose some of the credit. Sometimes they are good measures, but quite as often they are ill-advised and prevent the adoption of something better.

People who are urging their own pet health measure are very much inclined to forget that there are only one hundred cents in a dollar and sixty minutes in an hour, and they will urge their measure regardless of the time and money that it takes. Doubtless most public health measures do some good—the question is how much, and the next question how much as compared with other things. I tried some years ago to work out a statement of the relative values of the things which we tried to do in Providence. This chart hanging on the wall is the result of that computation. I did not bring it here because I believe it is the right thing for Charlotte—in fact, it is not the right thing for Providence now. Every year I go over it and revise it a little. Conditions are very different in North Carolina from what they are in Rhode Island, and very different in Robeson County, for instance, from what they are in Charlotte. What is the best expenditure of time and money in one community is not necessarily the best for all communities. In fact, it is certainly not the best. That is the reason why every health officer should devote a great deal of time to studying these questions for himself, for his community, so that he can work out the best plan for his own particular territory.

The scheme is based to a large extent on what municipal health has accomplished in the past. During sixty years in Providence the decrease in the annual number of deaths per 100,000 of the population has been

about 600. A considerable part of the decrease has been in the acute contagious diseases, diphtheria, scarlet fever and typhoid fever. The cause of that decrease was apparently isolation at home or in the hospital, the teaching of the mothers how to care for the patients, the protection of the schools, and, in diphtheria, the free distribution of antitoxin. For typhoid fever, the factor which did most to reduce the death rate was the removal of privy vaults. Our water supply was never bad. We had much typhoid fever every year, and many privy vaults. Way back in the eighteen nineties it was my opinion that the way to control typhoid fever was to control the disposal of excreta. The subject of the sanitary privy is one of the most important with which you have to deal. I have always felt that the only way to sanitate a privy satisfactorily was to get rid of it. So I urged the sewering of Providence, and as we got rid of the privies it was very interesting to see the typhoid disappear. Another improvement in Providence was one which I did not anticipate. After we had gotten rid of the privy vaults, I noticed that the diarrheal death rate in infants had gone down. I feel that this was due also to the removal of privy vaults. In the summer of 1890 we had 245 deaths of infants from diarrheal diseases. Last year, with double the population, we had 37 deaths from this cause. This is not entirely due to the removal of privy vaults. There was also a reduction in the general infant death rate. That, however, did not go down until about ten years ago. The improved knowledge of physicians generally and of pediatricians in particular had a great deal to do with it, but the chief thing was the work of the nurses.

Another drop in our death rate was in tuberculosis. The death rate from this disease has been going down steadily since 1880. I do not know what caused the decrease in the death rate from tuberculosis. I wish I did. It is very likely that our hospitalization, our sanatoria, our nurses, have had effect, but I have no idea that they had more than a small part in that decrease.

I naturally give a high value to the control of contagious diseases, to immunization, to the control of excreta disposal and to our tuberculosis work. The value of all these I could figure out in a certain way, a rough way, of course. We know how many lives have been saved, and we can assign a value accordingly. Mr. Schneider worked out the same sort of schedule in much the same way, not confining himself to local figures, but taking the figures for the whole of the registration area of the United States.

Although we can figure out pretty well that our nurses saved babies' lives, and pretty nearly how many they saved and how many lives were saved by privy sanitation, there are a number of absolutely essential health functions the value of which you cannot figure; for instance, vital statistics. We cannot do anything without vital statistics. It is our fundamental bookkeeping. We are all at sea unless we have vital statistics. Fortunately, vital statistics are worth all they cost for reasons other than those connected with preventive medicine. A complex society like that of the present time cannot get along without a record of births, deaths, and marriages, and if these records were of no value in preventive medicine, the state ought nevertheless to maintain a complete system of registration. I have been registrar of vital statistics since 1889, as well as health officer, and I appreciate fully the value of these records.

Then there is public health education. It goes without saying that we have to educate the people about health matters. We have to teach and should teach the truth. While I have given educational work a value of eighty, the good of that education which I have observed, really has only a minus value. Social workers without scientific training, newspaper men and legislators think themselves perfectly competent to educate the public. In fact, I have never seen a health officer who did not feel that he was better fitted than anybody on his staff to carry on educational work. It is not a good thing to teach a lie, but it is sometimes difficult to find the truth. At Johns Hopkins this winter they had three very distinguished lecturers: Dr. Newsholme, who believes that tuberculosis is, to a large extent, contracted in adult life; Dr. Krause, who says that the infection is acquired in childhood and that the only practical way to decrease tuberculosis is to decrease the strain and stress of life; and Dr. Raymond Pearl, who figures out by statistical methods that tuberculosis depends largely upon the inherited constitution. Who is competent to decide? We have, many of us, been teaching that it is a bad thing to eat fast, but some of the most distinguished physiologists in the country tell us that the food digests just as well if we do eat fast. There is a curious thing about education. You may have a whole lecture with everything in it true except one sentence, and that one sentence only will stick in the minds of your hearers.

It is impossible to carry on the work of a health department without a laboratory. I believe that one of the most important uses of the diagnostic laboratory has been to teach people science, not simply to help in the diagnosis of diseases. The laboratory has shown us the atypical case. The laboratory also has taught us to control our observations. It has made us familiar with the "control guinea pig."

There are certain lines of health work which I believe will come to the front more in the future. One of them is the control of nostrums. Then the care of the sick poor should be coupled with it. I had the care of the sick poor transferred from the charities department to the health department. Instead of having the poor department do as little as it could, I send the best men I can get to do as much as they can. If we fight nostrums, we have to see that there is an opportunity for the great mass of the public to get first class medical treatment. If we take away the nostrums, we must supply something to take their place.

It seems to me that the adulteration of food is not a health matter at all. The sanitation of food is of some importance; of how much I do not know. People in the South, I think, are inclined to attribute a great deal to it. I spent one day in a small Southern city where that was about all the health officer did,—stir up the markets and bakeries to make them cleaner. There is one line of sanitation in food handling establishments which I think promises well, though there is danger of its being overrated. That is the sterilization of eating utensils. Colonel Cumming, of the Army, is carrying on an active propaganda to show that contagious diseases are chiefly spread by eating utensils. I think he is mistaken as to its relative importance; but it is not a very expensive experiment to try sterilization, and it seems probable that it will reduce diseases somewhat.

Privy sanitation I put at sixty for Providence, but in the future very

little effort need be expended along this line. We have privies only on the outskirts, and there is now very little typhoid fever and diarrheal diseases.

Now, about nuisances: When I was first appointed, health officers had two functions—one, to get after dead cats and garbage pails, and the other to burn sulphur. The dead cats and garbage pails do not count at all, nor do other nuisances except where there is human excrement. I have been trying lately to get rid of nuisances entirely. I want to turn over the whole nuisance business to the police department, and refer all complaints to the police. They can attend to it better than I can. I waste my time and my money on it. What money I have been able to get in late years I have spent on nurses and not on sanitary inspectors. The police can do it without extra cost.

Housing, I never thought, had much to do with health. Poor health and poor housing go together, but so do poor health and low wages. I have not, as health officer, taken much interest in improved housing. As a citizen I do, but not as a health officer, but I fail to see how poor housing in itself produces disease.

Fly and mosquito control with us is not a question of great importance. There is no evidence that the fly has ever been much of a factor with us in the spread of typhoid fever. At the present time, with the little typhoid and diarrheal diseases that we have, it is not a factor. We occasionally have some malaria, and we have to fight that, but it is not a matter of great importance. We fight mosquitoes, but chiefly because they are a nuisance.

The prevention of infant mortality is, I believe, one of the most effective lines of health work. We know the most important measures for preventing sickness among infants, and we can at once make a showing in lives saved. Some would give a higher value to milk supervision, but personally I have not been able to see that the character of the milk is the most important factor in infant sickness. It is how the milk is given, rather than the character of the milk.

Another line of work which promises much and is, I believe, of very great importance is the school work, the care of the children. We cannot get results and state them in figures as we can in baby welfare work, but everybody feels that child welfare work accomplishes a great deal. I believe in this work heartily, but I wish we had the figures to show what it accomplishes, as we have in infant welfare work.

In regard to tuberculosis—I am very uncertain. It is certainly a good thing to have a hospital where you can take cases that are poor and are not cared for at home. It is certainly better to find a case early than to find it late. A dispensary helps us do that, and so does the nurse. These things accomplish good, exactly how much I do not know, but I have estimated it at the figures shown on the chart.

In closing, I wish simply to repeat that this scheme of relative values is not presented as something final. It was prepared simply as a tentative scheme for a definite place and time. It must be varied from time to time and from place to place. The drawing up of a similar scheme by every health officer to meet the conditions of his work, I am sure, will be found most useful in clarifying and defining his plans.

Discussion of Dr. Chapin's paper: Relative Values of Health Problems.

Dr. D. E. Sevier, Asheville:

I would like to make a motion that the Health Officers' Association of North Carolina extend a rising vote of thanks to Dr. Chapin for his instructive lecture.

This motion was seconded and adopted.

Dr. Long, President:

The matter is referred to the Committee on Visitors and New Members.

We are now going into the discussion of papers, and I wish to call attention to the note at the end of the program, as follows:

"No paper shall exceed fifteen minutes, no discussion be longer than five minutes and no one allowed on the floor more than one time during a session. (By-Laws.)

"Exception: The President's address and invited guests from outside the state."

This is made necessary by the fact that we have a long program and only a limited time in which to present the papers and discuss them. We, of course, do not expect that the time would be wasted in any event, but we wish to omit anything not pertaining to our purposes.

At the close of the morning session a photograph of the members of this Society will be taken by a representative of one of the local papers.

RELATIVE VALUES AND FINANCIAL EQUIVALENTS IN COMMUNICABLE DISEASE CONTROL.

By J. S. Mitchener, M. D., Edenton, N. C.

Would a number of doctors here be interested in organizing a partnership with the aim to reduce morbidity and mortality in North Carolina for which they would receive 25% of the financial equivalent saved the state? Would such an undertaking by these physicians appeal to our state officials? Would our tax payers agree to such taxation if they were given a guarantee to reduce their aches and pains, give them more work days per week, and help them to reach their three score years and ten and then some? To make public health work go we must put it on a business basis, and, to use a slang expression, deliver the goods.

By financial equivalent we mean the ratio between the expense of conducting such a business and the dollar value of lives saved, days of sickness prevented, number of work days increased, and the gain in school attendance.

What should be the capital of this partnership? North Carolina has a population of 2,500,000, which divided by 100 will give 25,000 to each unit, the average of each county. An allotment of $10,000 for a director and assistants to the unit will call for an appropriation of $1,000,000. For an executive staff at the central directing office an additional $100,000 may be added to the budget, making a total of $1,100,000. Would such an investment be likely to bear a dividend in an effort to control the communicable disease phase of health work?

There were reported to the Bureau of Epidemiology and Vital Statistics for 1919:

3,519 cases Diphtheria, with 242 deaths.
1,512 cases Scarlet Fever, with 21 deaths.
5,725 cases of Measles, with 114 deaths.
5,669 cases Whooping Cough, with 209 deaths.
2,322 cases Small Pox, with 9 deaths.
1,575 cases Chicken Pox, with 0 deaths.
2,956 cases Typhoid Fever, 427 deaths.
? Other fifth-borne diseases, 1,377 deaths.
And there are many other cases yet to be heard from.

This vividly presents the possible field. It shows that thousands are feasting on the various kinds of excreta of others—such can be stopped.

Our effort to control the two most prevalent diseases, measles and whooping cough, is by education, the poster, and restriction of the infected as soon as possible and to as limited a number of individuals as possible. Is the poster effective? Yes, emphatically so. People respect more than many think. It brings home to the householder the doctrine of individual responsibility and it impresses the gravity of the disease upon all more forcibly. Personally, I think the poster does more good in saving the life behind it in this way than in preventing the spread of contagion .

With protection against smallpox and diphtheria, these deaths and cases should be eliminated.

With prevention of soil pollution the filth-born diseases could be wiped out at one blow. The hook worm infected, which in some parts of our state is by no means extinct, is not included in the statistical reports. May I add that legislation is needed and is an important factor in the means to our end.

We shall now make a financial study of smallpox, diphtheria, and typhoid, three diseases that are definitely preventable, considering the average number of days of sickness for smallpox as 21, diphtheria 10, and typhoid 42, and estimating the cost of a day of sickness at $10 and a life at $4,000.

The statistics for 1919 show that there were

Cases.	Disease.	Deaths.	Days of Sickness.	Days of Sickness.	Cost of Deaths.
2,322	Smallpox	9	48,800	$ 488,000	$ 36,000
3,519	Diphtheria	242	35,500	355,000	968,000
2,956	Typhoid	427	118,240	1,182,400	1,708,000
	Total	678	202,540	$2,025,400	$2,702,000

There were also 1,377 infants who died from filth poisoning which would have been eliminated with typhoid.

Based upon the statistics for 1919 just given, we see that with an annual expenditure of $1,100,000, in a few years there can be an annual saving of $4,757,000 to our state. Prevention of these three diseases—smallpox, diphtheria and typhoid—will protect against others, as a cleaner life will offer resistance to other diseases. Educate people to sanitation and you educate them to efficiency, a by-product.

The above statistics may be said to be speculative, so we shall now see what North Carolina has actually done: In 1914 there were 839 deaths

from typhoid, and at this rate we should have had for the five following years 4,195 deaths, or a loss in human dollars of $16,780,000. As an actual fact, we have had 1,049 deaths less, a decrease in the number at the rate of 210 per year. This reduction has been on the increase each year, not spasmodic as after an epidemic, and has varied directly with the intensity of the preventive steps taken.

Let me cite specifically again: There were 9 counties with an average of 120 deaths for the group from typhoid for three years prior to the opening of full time departments. Two years' work has been completed in these counties and the yearly average of deaths is 31 for the group—an example and monument to intensive whole time health work.

In my county, Chowan, where two typhoid campaigns have been conducted, fewer cases were reported last year than I had in my private practice the summer previous to this work.

Possibly I may digress from my subject when I mention venereal diseases, but how can I pass them by in silence when our state institutions for the mentally affected, our blind schools, our still birth records, our sterile men and women and the multitude of pelvic diseases and operations bespeak the need of exploring this field more intensively. We cannot depend upon the education our soldiers received to remedy this. We need more sex education and to train our young women to exact of their partners the same standard of life that is required of them. As men, let us endeavor to help the young boy of today enter the holy bonds of wedlock with the same purity that he demands of his wife, that the sins of the father may not be visited upon his innocent children.

In this brief sketch I have tried to give facts, to show the field of work, to casually mention the manner of procedure to make emphatic the good that can be accomplished if it is but undertaken. By giving statistics of past years I have tried to prove to you that this can be done and that we have already begun to realize the dream of our leader "in life saving and disease prevention" in North Carolina.

Discussion of Dr. Mitchener's Paper:

Dr. F. M. Register:

You will notice that Dr. Mitchener's most excellent paper depends upon case reporting and vital statistics. We realize that we must have these reports, but it is a question how best to get them. There are two diseases for the reports of which the doctors are responsible—diphtheria and typhoid fever. These two diseases are reported by physicians. Whooping cough, measles and chickenpox are reported by other persons, not always by doctors, because these cases do not always have a physician. I would suggest that health officers have a chart in the office, and chart all the doctors in the county, so that they can tell exactly what each doctor is doing in the reporting of contagious diseases. We try to do that in our office by counties. The health officer should chart each doctor individually, and occasionally show each doctor his record. Individualize the reporting of cases.

It is very hard sometimes to get physicians to report. I think failure to report is caused usually by negligence. I believe most of the physicians are interested in the reporting of diseases. We do not have many violations

of this law, and those we have I think come purely from negligence. The health officer or quarantine officer has to keep behind the doctors and remind them of this reporting, send them report cards, etc.

It is very important to get early reports, because the health officers cannot do anything in the way of preventing disease unless early reports are made. If the reports are late they do not amount to much to the health officer so far as the prevention of disease is concerned.

RELATIVE VALUE AND FINANCIAL EQUIVALENTS IN CONTROL OF MEASLES AND WHOOPING COUGH.

Dr. C. E. Lowe, Wilmington.

Whatever may be the difficulties, and there are certainly many, of keeping any system of accounting which will determine the actual cost of any method of control of a particular disease, I think it may be safely assumed that many of our smaller health departments practice too little public health accounting and make too little study of statistical data concerning their work.

I wonder how many of our smaller departments the country over have a complete set of the Mortality Reports of the Federal Census Bureau, and how many of those who have them make adequate use of them?

In discussing the relative value and financial equivalents of the control of measles and whooping cough, I shall take the liberty of freely quoting figures from the Mortality Reports and shall here admit that I have no data whereby the cost of our attempts to control the spread of these two diseases may be ascertained.

The amount of effort and the expense incident to methods of control of these diseases should, of course, be governed both by their relative importance in affecting the general morbidity and mortality rates and by the result which a given amount of effort and expense will produce in decreasing morbidity and mortality.

The medical profession has been slow to realize the seriousness of either measles or whooping cough, and this attitude has been reflected in that of the public. As a result, the morbidity statistics of these diseases are very incomplete and their control rendered much more difficult. However, I think it must be conceded that they are the most prevalent of the communicable diseases and that the financial cost is tremendous when the care of the sick, the loss of school time and disruption of school organization is considered in connection with the mortality loss, even though the lives of children are not reckoned to be worth as much from the purely economic standpoint as those of middle aged adults.

A study of the Mortality Reports concerning the more important communicable diseases from 1900 to 1917, inclusive, will show that the death rate per 100,000 for typhoid fever gradually decreased from 35.9 to 13.4; the average rate for the eighteen years being 24.2, that for the first nine years being 31.2 and for the second nine years 17.1. This was a very gratifying result and shows that the efforts directed to the control of typhoid have been efficient.

The rate for diphtheria and croup gradually declined from 43.3 in 1900 to 16.5 in 1917, the average rate for the eighteen-year period being 23.6;

that for the first nine years being 29.1 and for the second nine years being 18.0, which rates show another very gratifying decrease. Measles, whooping cough and scarlet fever are pre-eminently diseases which occur in epidemic cycles of three to six years that vary greatly in virulence, and for this reason comparison of one year with another might be valueless or lead to erroneous conclusions.

The average mortality rate for measles in the entire registration area for the period of 1900 to 1917, inclusive, was 9.9. For the seven years 1911 to 1917, inclusive, it was 9.6, which shows practically no decrease. During the latter period the average rate for North Carolina was 16.3, with a much higher average rate for the last three years of the period. During the 1911 to 1917 period the North Carolina white rate was 20.8 and the colored 15.4, which at least shows that measles is much more frequently recognized as a cause of death amongst the white as compared to the negro race. Statistics for all the Southern States in the registration area show a similar condition, and I assume that part of this may be due to the greater difficulty of recognizing the acute exanthems in the negro race.

The average rate for the larger cities of North Carolina for the period of 1911 to 1917 varies greatly from 8.5 in Greensboro to 26.6 in Asheville, and in this group Wilmington occupies a middle position, with a rate of 12.5. This period of eight years covers the entire time for which North Carolina statistics are available. As already pointed out, the North Carolina rate is much in excess of that of the registration area, but the period is perhaps too short to give a reliable index of average conditions.

The average mortality rate for whooping cough in the entire registration area for the eighteen-year period 1900 to 1917 was 10.7. For the registration for the seven-year period 1911 to 1917 the average rate was 9.9, or a decrease of only .8 per 100,000. This average rate for North Carolina during the 1911 to 1917 period was 24.3, which is a very great excess over the rate of 9.9 for the registration area. All the Southern states in the registration area show similar high rates, which fact is due to the abnormally high mortality from the disease amongst the negroes. For the year 1917 the only states in the registration area having rates above 20 were North Carolina, with 23.1; Virginia, with 22.4, and Kentucky, with 20.7. For the seven-year period 1911 to 1917, inclusive, the average white rate was 16.2, which is greatly above the total rate for the entire registration area, while the average colored rate of 39.8 for the same period was four times that of the average rate for the registration area.

The average rate for the larger North Carolina cities varied from 12.7 in Asheville to 42.7 for Wilmington. The mortality reports for 1911 give Wilmington the enormous rate of 239.3, which is tremendously in excess of any rate recorded for any other city over the entire period for which statistics have been published. The nearest approach to it being the rate of 116 for Key West, Florida, for the same year.

In contrast with practically stationary rates for measles and whooping cough we find that the rate for scarlet fever has continually though slowly declined, as shown by the average rate of 8.8 in the registration area for the period 1900 to 1917 when compared to the rate of 5.9 for the same area during the period 1911 to 1917.

In summarizing these statistics we find that most of the acute infectious

diseases have shown more or less regular and continuous decreases during the past twenty years, while measles and whooping cough have remained practically stationary. This indicates that our past methods of control have not been very effective and leads to the question of why they failed and whether they may yet prove effective under more rigid application.

Whooping cough certainly and measles qualifiedly are to be classed among the acute respiratory infections, and of practically all of these it may be said that we have signally failed to secure much preventive control.

It is my honest conviction that present methods of control are almost useless, if not absolute failures because, despite Koplik spots and catarrhal symptoms, cases of measles are not always diagnosed before the eruptive stage, nor is whooping cough diagnosed before the whooping stage of the disease. Isolation at these late periods does little good because the time when the diseases are most communicable is during the early and catarrhal conditions. Despite the difficulties of early recognition and isolation of the mild cases of scarlet fever, we have apparently secured better results because it is less contagious and because the characteristic rash and sore throat which lead to diagnosis appear earlier than the typically characteristic symptoms of the other diseases. Another factor is the public dread of scarlet fever which induces more prompt recognition and reporting of that disease, although roughly speaking measles and whooping cough each cause 100,000 deaths in this country to 6,000 from scarlet fever.

I firmly believe that our best method of preventing measles and whooping cough lies in a long and thorough campaign of publicity and educational effort, in which we must teach the physician and the public the nature and dangers of all the acute respiratory infections, until the lesson is learned that promiscuous dissemination of matter from the respiratory tract is equally as dangerous as promiscuous defecation or urination. Pertussin vaccine is no doubt useful as a preventive of whooping cough and on that and education of physician and layman we must largely depend for the prompt reporting and early isolation of these diseases. These appear to be the only methods available until medical science develops more certain immunity producing measures.

DIPHTHERIA AND SCARLET FEVER.

Dr. E. R. Hardin, Health Officer Robeson County, Lumberton.

DIPHTHERIA:

We know the cause of diphtheria and its modes of transmission, we are able to check its spread and we possess a specific preventive and curative agent of great potency. Yet from an economic standpoint diphtheria is still an item to the people of any community where it is regarded carelessly by the laity or the local practitioners.

By way of illustration I will describe some cases that have come under my observation in Robeson County:

Mr. A. had been sick with sore throat for two days when he was seen by his doctor. His case looked like tonsilitis, and he was given only local treatment—no antitoxin. He went about his business as usual. In about a week two children in his home developed diphtheria, and in twenty-four hours from this time three children of Mr. A.'s brother, that lived next door, came down with diphtheria.

These children had played together and had mingled in the homes. These gentlemen lived near the public school, and their children had played with the school children. Six days after the children in these two families became sick, two school children from another home in the community came down with diphtheria. At the same time diphtheria appeared in the home of two other school patrons. Thus we have following one missed case, five cases in two families, where the contact was in the home, and four cases in three other families where the contact was in the school. Had this one missed case been properly controlled, there would most probably have been no more cases. The cost to the families involved in this epidemic was $235, an average of $47 per family. The cost of quarantine in the first missed case should have been about $ .35.
quarantine in the first missed case should have been about $4.35.

ANOTHER EXAMPLE:

These cases were seen late or reported late by the doctors. Three families involved, three cases to each family. The cases were reported on an average of 3½ days after onset. (First case reported four days late, cost $117; second, three days late, cost $26; third, three days late, cost $37; fourth, four days late, $60). Total cost $250, or an average of $60 per family. The cost to each family should have been, according to the average in ten cases, where there was proper control, $27. The cost of early quarantine and control in each case would have been about $35. The time lost by the children in the above families from school has not been included in this estimate.

SCARLET FEVER.

Scarlet fever is one of the hardest of all contagious diseases to control in rural sections. This is due mainly to the fact that it is not recognized by the laity, and mild cases are often overlooked by the physicians. The following epidemic that I observed in Robeson County is a practical illustration:

Two children in a rural community were kept out of school by their parents, because they complained of feeling sick. Two days later one of them broke out with a scarlet rash, and the next day the same rash appeared on the other child. The family and neighbors thought the children had roseola, and paid little attention to it. No doctor was called. The teacher was told that the children had roseola. About the same time the school children in three other families of this community broke out with the same rash, and in one of these families seven children had the disease. None of these cases were seen by a doctor; two of these children returned to school after a few days. Within another week six other school children in three families of the community developed the same disease. One of these families was seen by a doctor when the children had the scarlet rash; later five other children in this family had the disease. The first cases in this home were reported and quarantined. There was good control in this last family. No other cases were known to develop in the community after this time. Twenty-one children in seven different families in the community had the disease. All of these people thought it was roseola. The total cost to these seven families was about $98.00, or an average of about $14.00 per family. The cost of quarantine in the first case would have been about $ .35. The time the children lost from school of these seven families is not included in this estimate. Two cases were complicated by nephritis.

SMALL POX AND CHICKEN POX.

Discussion by Wm. Jones, M. D., Greensboro, N. C.

From a casual consideration of this subject, one is apt to fall into the error of thinking that these two diseases are associated simply on account of euphony. While they have many common characteristics, they are dis-

tinct each from the other. Both are eruptive skin diseases of unknown etiology, and in which atypical cases may bear a very close resemblance in their local manifestations with consequent difficulties in differentiation. On account of this not infrequent similarity in appearance of the objective, and in consideration of the fact that we are seldom able to obtain an accurate account of the subjective symptoms, these two diseases should be handled in the same way.

Before we consider the questions of control, I think we might spend a few minutes in an endeavor to ascertain some of the reasons why we have failed to get control, especially of Small Pox, when we consider the fact that more than one hundred years ago Edward Jenner clearly and unmistakably demonstrated the fact that vaccination was effective in preventing the occurrence of this disease.

In 1806, Thomas Jefferson, having been so favorably and forcibly impressed with the work as done by Jenner, wrote him and said: "Future generations will know by history only that the loathsome Small Pox has existed and by you extirpated." The general public has known this to be a possibility for at least one hundred years, yet we are far from seeing the fulfillment of Jefferson's prophecy.

One reason why we have not obtained a better control of all communicable diseases than we have, is because of the fact that we have been working from the wrong angle, for we have been endeavoring to drive the public and not to lead them.

Mankind, for almost time immemorial, has looked upon disease, deformity, and death, as a burden or penalty placed upon him by an All-Wise God, for some mysterious reason, and in consequence has made little or no effort to protect himself from what he considered the inevitable. Against prejudice and superstition it is almost impossible to make headway, as no argument is strong enough to overcome such a combination. This class, which is controlled by ignorance, opposes vaccination of themselves and family only, and we have another class who oppose it for the general public. This latter class cannot always be called ignorant, but they are certainly prejudiced, and this is a worse state than that of ignorance. For they have the ability to argue very effectively to the uninitiated and especially so upon the ignorant. As an illustration of one of this class, I call your attention to an editorial as published in one of our state papers, which is in part as follows:

"We boldly stated and repeat the proposition that in ———— men had died from the direct effect of being vaccinated, and that many people would not undergo the operation of vaccination, preferring Small Pox to it. We didn't care what it cost in dollars and cents to keep a loathsome disease from spreading, and we didn't think, incidentally, that North Carolina had accomplished anything in doing away with quarantine and suggesting vaccination. . . . . There is in this world today an international organization composed of brilliant physicians, men of letters and men of learning, who insist that vaccination does no good."

"Solus populi suprema lex" is the foundation of all civil government. Burke says, "All government is a necessary evil." But it is certainly much less than no government at all. Today the pendulum has gone entirely too far, and we are having entirely too much government, so much so that it

is attempting the impossible, and even attempting to legislate morals. We have such a multiplicity of laws that there is confusion, and not only confusion, but lack of respect for law. The respect for law is in direct proportion to the number of laws, and when you increase them to infinity, then you proportionately decrease the respect of the public for all law. We do this in spite of the fact that we have in the Jew an excellent example, a race that so far as we know is thousands of years older than our own, and who have withstood innumerable and untold hardships and persecution, and yet have survived. We know that their great law giver, Moses, gave them only ten laws, and we also know that Jesus Christ, the only Divine law giver, gave only two by the observance of which mankind was not only to live here, but upon which depended his hope of the future.

How then shall we control these diseases, and especially Small Pox? Shall we institute shot-gun quarantine as the above quoted editor would have us do? Before doing so, let me call your attention to what did actually occur in the very town in which the above editorial was written and in which the editor now lives.

Some years ago a well-defined case of Small Pox was imported into this town. The case was at once quarantined and four blocks of the town were roped off and guards were placed to patrol the district both day and night. Food, drugs, and medicine were supplied by the town, which was also compelled to furnish whiskey to the guards. The case was released at the expiration of forty-nine days, and a bill presented to the town for $2450.00 for medical services alone, and in addition there was food, salary of the guards, and expenses to the entire neighborhood incident to the roping off, inconvenience, etc. I think we might conservatively place the cost at $6000.00, and say to be certainly on the safe side we divide this estimate in half, making $3000.00.

Now what would have been the financial equivalent in my county last year, even provided we could have gotten the whiskey for the guards? Well, outside of the cities of Greensboro and High Point we had one hundred and thirty-two cases, which would have amounted to $396,000.00.

The general public knows as well as we do that vaccination is the only effective way to control Small Pox, and I see no reason of bothering ourselves with quarantine, which is only a fake. No sane man will endeavor to long argue against facts, and statistics show that in Sweden, where they have vaccination, and in Spain, where they do not, that the deaths from Small Pox are in proportion of one to nine hundred and sixty-three (1 : 963), and this not for one year, but for four consecutive years.

I believe that compulsory vaccination is the only way to completely and absolutely control Small Pox, but I do not know that this is necessary. It may be a good thing to have a small amount of it with us all the time, in order that we may not become negligent about vaccination. If compulsory vaccination is desired, we have all the law necessary, for not only has the Supreme Court of North Carolina passed upon the question and sustained it, but also the Supreme Court of the United States. I think the no-quarantine plan an excellent one, but I do not think we should advise this and then upon the first appearance of an epidemic, especially when the epidemic is about to affect big business, change your position and recommend rigid quarantine. When you do this, one of two things is the trouble with

you, either you have no back-bone (and this I would hate to think), or you have not faith in the no-quarantine plan.

If you believe, and you must believe in the efficiency of vaccination, then by the no-quarantine, go-as-you-please plan, you will have indirect compulsory vaccination, for that neighborhood at least. It is estimated that every case of Small Pox costs the state $100.00, that is, in time lost from work by the patient and attendants, etc.; and how much more would the cost be and with no fewer cases under the quarantine plan.

So far I have had nothing to say about Chicken Pox, further than that it should be handled similarly to Small Pox, but this has reference to the handling in general, and not in the detail. I do not think we should even placard for Chicken Pox were it not for the fact that you sometimes get a Chicken Pox report for a Small Pox case. I do not believe in vaccinating for Chicken Pox, except under special conditions. Whenever a case occurs in a family where there are several children, then vaccinate the other members. Or when it occurs in an orphanage where you have many children living together, I think vaccination should by all means be used.

TYPHOID AND OTHER FILTH-BORNE DISEASES.

Dr. C. W. Armstrong.

In my opinion, in no other phase of Public Health work and disease prevention can greater results be shown both as to the saving of life and dollars, than in the prevention of the filth-borne diseases.

There is probably nothing which so devitalizes a community as an epidemic of typhoid fever, and nothing that can give parents and physicians more anxiety than the diarrheas and dysenteries of children. In a community where these diseases are prevalent and where no steps have been taken to prevent them, it is often difficult to make the town and county officials see the advisability of taking such steps. It is sometimes hard to make see that it would be a good financial investment should they appropriate a sum of money to be used in the prevention of these and other diseases. Even a very rich community will hesitate in some instances to make such appropriations. But if they can be shown that for every dollar they invest they will get that much and more in return, and also make their community a better place in which to live, it makes it a much easier proposition to put over.

It pays to have your community free from typhoid fever not alone because of the fact that the citizens save their money which they would otherwise pay out for doctor's bills, medicine, nursing, etc., but also because of the fact that if you have a low typhoid rate in your own town or county it is a distinct business asset. For the purpose of illustration I will cite an instance in the town of Salisbury. During the past year two wealthy capitalists were considering establishing business in the city of Salisbury which would mean a great deal to our town in the way of increased population, increased taxation (both as to corporation and individual), a good deal of money coming to the town and all the other things which a large corporation means to the community in which it is located. One of the first questions asked by these men was "How much typhoid fever have you here, and what steps are being taken to prevent it?" The fact that we were able to say to them that every known means was being used for the

eradication of typhoid, and that the rate in the county had been reduced from 109 cases in 1918 to 54 cases in 1919, and from 44 cases in the City in 1918 to 2 cases in 1919; went a long way toward bringing these manufacturing plants to our town.

It has been estimated that every case of typhoid fever costs the individual at least $200. I consider this a very low estimate. This represents actual cash expenditure for doctors' bills, nursing, medicine, etc. In addition to this an individual, if he be of working age, must lose time from his work for six weeks to two months, with the resulting loss to him in wages and the loss to the community for his non-production during this time. At this rate typhoid fever cost the people of Salisbury $8,800 in actual cash put out in 1918, and $400 in 1919. The people of Rowan County spent in 1918 on typhoid fever $21,800; and $10,800 in 1919. This represents a saving to the people of the county of $11,000 during the year of 1919, and $8,400 to the people of Salisbury. This amount of money which they saved on typhoid fever alone is sufficient to maintain a full-time county health department consisting of full-time health officer, office assistant, two nurses and a sanitary inspector, for a year's time.

For a county to have accomplished this work without the services of a full-time health department would have cost them not less than $8,485.40, as the following figures show:

4609 people were vaccinated against typhoid fever, which would have cost the county at least fifty cents a dose; totaling $2304.50.

2446 sanitary closets built in the county which would easily have cost them $2.00 each; totaling $4892.00.

100 public meetings held and lectures given on sanitation with a total attendance of 12,889; at the estimated cost of ten cents for each person—total of $1288.90.

The total amount of Public Health Work done in Rowan County during the past year cost the County, they paying 60% of the total budget, $3,664, and in return for this amount expended, they got work done for the prevention of filth-borne diseases alone, to the value of $8,485.40. The people of the County saved $11,000 to say nothing of the prevention of death and suffering all over the County.

The question has been asked, "Is Public Health purchasable?" These figures indicate to me very clearly that it is.

RELATIVE VALUES AND FINANCIAL EQUIVALENTS IN RELATION TO DEGENERATIVE DISEASES.

By L. Jack Smith, M. D., Wilson, N. C.

The subject of degenerative diseases is today claiming the attention of a great many people. Hygienists, Physicians and Life Insurance Companies have caught a vision of the needless and appalling waste of human life and working efficiency. The necessity for the conservation of human life and efficiency has never before been so forcibly impressed on the minds of everyone as at the present time. Now that production is far below demand, and the problem of high cost of living still running riot, the saving of a human life and rendering it more efficient has a financial value never before fully realized. The burden of this paper, therefore, is an effort to set a value

in dollars and cents on the measures now being employed to prolong the life and increase the efficiency of persons afflicted with degenerative diseases, and to show what dividends such measures are returning. The conclusions arrived at in this paper are not from the viewpoint of a statistician alone, but rather the viewpoint of a health officer's experience and observation in the conduct of Life Extension work. Estimating the value of human life is a task that cannot be covered by a knowledge of mathematics alone. However, it is necessary to introduce a few figures as a basis for discussion. Therefore, the following table of values prepared by Dr. Eugene L. Fisk, Medical Director of the Life Extension Institute of New York, is herewith inserted verbatim:

ESTIMATION OF ECONOMIC GAINS PER ANNUM FOR LIFE EXTENSION EXAMINATIONS CALCULATED ON AN ASSUMED GROUP OF 1000.

ESTIMATION OF SAVINGS.

Expected mortality per 1000 in population examined	10 lives
Probable number of substandard lives per 1000 population examined	300 lives
Expected mortality without examination per 1000 substandard lives	20 lives
Probable mortality with examination substandard lives per 1000	10 lives
Gain in mortality (lives per annum) in substandard group	3 lives
Estimated economic value of mature adult life.....$8,000.00 (Farr's formula modified to allow for present wage scale)	
Mortality gain to state for each 1000 examined	$24,000.00
Assuming 2 people constantly ill for each death occurring in group, the saving of 3 lives means the elimination of 6 cases of chronic illness from the group, or a reduction of 2190 days of illness. At a medical cost $1.00 per day, the saving equals	2,190.00
	$26,190.00
Add at least 1 life saved in standard group	8,730.00
	$34,920.00
Cost of examining 1000 at $2.50	2,500.00
(Simplest routine completely covered by salaried examiner)	
Profit to state and community	$32,420

Also excess dividends in

Health,
Happiness,
Satisfaction in living,
Prevention of pain,
Prevention of sorrow,
Prevention of discontent.

The above table represents a condensed report covering a study of millions of lives, among all classes of people, over a period of many years, and should be accepted as representing as nearly the facts as is possible. A study of this table reveals some interesting and useful information, which will be used for further discussion.

It will be seen from Dr. Fisk's figures that we may expect to find about one-third of the population examined, to be defective or substandard lives. This, in our experience, is too conservative, as the following tabulation of some of the most common defects will show:

1—Oral sepsis and sequlæ_____75%
2—Pulmonary Tuberculosis _____ 6%
3—High Blood Pressure_____ 17 %
4—Valvular heart disease_____4%
5—Kidney disease (Bright's and Diabetes)____ 3 %

Out of 1000 people examined (on the basis of 17%) we would expect to find 170 people with high blood pressure. Now what is it worth to these 170 men and women to know they have high pressure and to be given the proper advice as to diet and hygiene? We know that a large per cent of these high blood pressure cases are amenable only to hygienic and dietetic treatment. In this group we find the average age to be about forty years, men and women in the most useful period of life. How are we to arrive at a proper estimate of the value of the number of years added to these 170 lives and what is it worth in dollars and cents? For the sake of aiding us to a proper conclusion the following experience is related: Four brothers, ages 34, 36, 38 and 40 years, were examined and found to have high blood pressure. The oldest, who had the highest pressure, was beginning to feel definite symptoms. The history revealed the fact that their father died of apoplexy at the age of forty-two years. Is it not reasonable to assume that the sons of this man would have their lives cut short at approximately the same age as their father? Is it not reasonable to expect that by proper hygiene and diet these four sons will have their lives extended at least ten years each, beyond the age of their father? Dr. Fisk tells us that the economic value of mature life is worth $8000.00. Could we not say then that the ten years saved on each of the four sons, forty years, represent a mature life, and its economic value therefore would be $8000.00? It would seem that these figures are conservative enough to be accepted by the most inquiring mind.

As formerly stated, we would expect to find 170 people out of every 1000 examined with high blood pressure. Now let us lay claim to a saving of only five years each on the lives of these 170 people, making a total saving in years of five times 170, or 850 years. This would represent approximately twenty adult lives, each being worth $8000.000 or a total of $160,000.00. Now add to this 6% or sixty tuberculous out of each 1000; 4% or forty valvular heart lesions; 3% or thirty kidney lesions, making a total of 130 defectives found in 1000 examined; 130 multiplied by 5 equals 650 years added to the lives of these 130 people; 650 years would represent approximately thirteen mature adult lives, worth $8000.00 each, or a total of $104,000.00; this added to $160,000.00 makes a grand total of $264,-000.00 saved in these four diseases alone. For fear of being accused of overestimating the facts and real monetary value of this work, we will cut this figure to one-half of $264,000.00 or $132,000.00, and then it would seem too large to the average person who has not duly considered all the facts pertaining to this subject. Every effort has been made to arrive at a conservative valuation. No consideration of excess profits, such as health, happiness, satisfaction in living, prevention of pain, prevention of sorrow, prevention of discontent and the educational values have entered into the sum total of the preceding figures. Neither have we mentioned the money saved in doctors, nurses and medicine bills and the valuable time lost by illness.

A full discussion of all these would make a lengthy paper within itself. Special mention should be made, however, of the educational value in relation to the other activities of a Health Department. Coming in personal and intimate contact with the adult population in the conduct of Life Extension work gives the Health Officer his golden opportunity to reach out and touch directly and indirectly the lives of nearly every individual in his community. Especially is this true in dealing with the more illiterate people. If you convert one man and show him the right way to live, he in turn will act as a missionary for the cause of Public Health. Here is a concrete example of the cumulative action of this public health therapeutic measure: An illiterate man about fifty years old appeared for examination and was found to have high blood pressure. As usual in this class of people, he had the patent medicine habit. After being told of the dangers and useless expense, he was advisd to stop this habit. He was instructed as to diet and proper hygiene. Eighteen months later this same man appeared at the office of the Health Department for a different purpose, pertaining to the welfare of his grandchild, a baby of a few months, weighing less than at birth. After making a butter fat test of the mother's milk, of which he had brought a specimen, it was found poor in quality. This baby was put under the care of the Infant Hygiene Nurse for proper feeding, and as was expected the little one is now a fat, happy baby, and a still happier mother, grandmother, grandfather, aunts, uncles and all the other numerous relatives. What are the present results in this case:

1—One man with his high blood pressure markedly reduced and under control.

2—One baby's life saved.

3—A conversion of relatives and friends to the value of proper diet and hygiene.

Who can say what the results of the future will be?

Now that we have discussed rather in detail, from different angles, certain facts which have led us to conclusions as to approximate values, we will summarize by rendering a financial statement in tabulated form. This calculation is based on an assumed group of 1000 persons examined in one year.

INVESTMENT OR COST TO THE COUNTY.

1—Number days necessary for Health Officer to examine 1000 persons per day	100 days
2—Salary per day based on $3600.00 per year	$ 10.00
3—Total cost to examine 1000 persons	1,000.00

DIVIDENDS.

1—Amount saved by extension of lives based on foregoing calculations	$132,000.00
2—Amount saved on difference of cost of examination by full time Health Officer, as against private or Insurance Examination	4,000.00
Total saving	$136,000.00

Excess dividends or profits:

Health,
Happiness,
Satisfaction in living,
Prevention of pain,
Prevention of sorrow
Prevention of discontent,
Relative educational value.

Discussion of Dr. Smith's paper: Relative Values and Financial Equivalents in Relation to Degenerative Diseases.

Dr. Long:

My department has done about 400 so-called life extension examinations. In listening to Dr. Smith's report and his tabulations of the conditions found, I learned that they are very similar to our own. We began this work about two years ago. Announcements were made at about twenty meetings we were having in connection with dental dispensaries in the county, simply stating that the Department would do physical examinations for the adults of the county between the ages of twenty and sixty-five years. That was the only announcement we made, except one newspaper article. We anticipated trouble in getting applicants, but instead we have had trouble in keeping up with the number of applications. It has proven, I believe, the most popular feature, or unit, rather, of the work that our Department has undertaken.

The performance of a large number of routine physical examinations, embracing a comprehensive history and record of findings enables the examiner to acquire an increasing degree of skill and precision in his work. A peculiar significance attaches to the fact that, in my series of 400 cases, not a single specimen of physical perfection was found. Associating the physical findings with the case histories, all of which were written by the applicant, the striking fact that not a single applicant examined reveals a personal history indicating even a near approach to an intelligent observance of all Nature's requirements for the sustenance, maintenance and upbuilding of the human machine to a high degree of efficiency is still more significant. Sins of omission and commission are glaringly apparent. Especially because of the fact that a majority of my cases are among the most intelligent people of my county, such as school teachers, ministers, professional and business men.

The whole idea of the life extension service is to teach the individuals who believe themselves to be well to take advantage of periodic physical examinations. To take stock of their physical well being and then to bring forcibly to their attention the vital necessity of associating their physical shortcomings with apparent errors of personal hygiene. We have isolated numerous advanced cases of chronic disease as well as an almost unvarying score of accumulated minor deficiencies, more slowly, but none the less certainly, deadly in their insidiously persistent effect.

Certain phases of public health work require not only persuasion, but occasional resort to legal procedures to enforce necessary protection to the community against contagious diseases. This militates against spontaneous co-operation in organizing and extending valuable phases of voluntary work. The intimate personal relationship established in performing physical examinations of a comprehensive character is a powerful factor in educating the public to appreciate the possibilities of increasing human efficiency and prolonging human life.

We usually receive enthusiastic support from the family and friends of persons who have had the benefit of life extension examinations in every phase of public health work in which we engage.

Discussion of Dr. Smith's paper: Relative Values and Financial Equivalents in Relation to Degenerative Diseases.

Dr. E. T. Hollingsworth, Clinton:

We started this life extension unit in Sampson County, and have run it for eight months. We have examined about thirty applicants, and in these thirty ran across six cases, two of diabetes in school children. They had gone from one doctor to another, and finally they floated into our clinic and we discovered that they had diabetes. We gave them no medicine, but advised a change of diet. They have gotten better and have now gone back to school. The little money we spent for the health officer's salary would be more than saved by the improvement in the health of these two children.

RELATIVE VALUES AND FINANCIAL EQUIVALENTS IN TUBERCULOSIS PREVENTION WORK.

Dr. L. B. McBrayer.

After hearing the most splendid address of Dr. Chapin this morning, it is perfectly apparent to all of us that it is very difficult to fix relative values in health work, and that relative values change as places and conditions change.

Now, without attempting for a moment to criticise anything that Dr. Chapin said, for I feel that in his presence I should take the shoes from off my feet, because the place whereon I stand is holy ground, I just want to call your attention to the place he has given to privy sanitation. I will venture the assertion that he has spent more money on sewers and water and water closets in the city of Providence in doing away with privies than he has spent on all the other work of his entire health department since he has been the wonderful health officer of Providence. It costs a lot of money to lay sewers and put in waterworks. It is worth more than it costs, like vital statistics. It is a necessity—ordinary humanity and decency require it, and it is worth the cost from that standpoint. It is worth it also from the standpoint of the decrease in typhoid and diarrheal diseases. It is worth more than the equivalent at which Dr. Chapin has rated it, and there are a great many other things worth more on that same basis.

The Metropolitan Life—February, 1920.

"The eradication of tuberculosis would add as much to the life span as has resulted from all sanitary improvements in the last 25 years."

The following table shows the relative values attached to the various lines of health work by Mr. Franz Schneider, Jr.:

Tuberculosis	12.1
Venereal diseases	6.6
All other communicable diseases	25.3
Infant hygiene	20.3
Privy and well sanitation	3.5
Milk control	2.7
Fly and mosquito suppression	2.4
Food sanitation	0.1
Inspection of school children	7.0
Vital statistics	5.0
Education	5.0
Dispensary and clinics	5.0
Laboratory	5.0
Total	100.0

Snyder, to whom Dr. Chapin referred this morning, in his table gave tuberculosis twelve points out of one hundred, all other communicable diseases twenty-five, and infant hygiene twenty. That would be open to discussion, also. There was a time, not so long ago, when there were more deaths from tuberculosis in North Carolina than from any other communicable disease. At this time, I believe the diarrheal diseases of infants and pneumonia are above it. But if you are going to put that on a financial basis you would want to value the life of the child. The mother would say that this is impossible, and, of course, it is. But certainly a lot is worth more when a house is put on it than it was before. It is worth more when the street is paved than it was before. Now, what is the worth of a child dying with diarrheal diseases as compared with a man thirty to thirty-five years old? The child is about two years old, and very little money has been spent on it. When a man is twenty-five years old, the State of North Carolina has educated him, very largely, then his father or his mother or he himself has paid his way through college. If he decides to be a professional man of any kind, after he has finished college he has taken time and money to make himself proficient in whatever profession or calling, whether farming or medicine, he has selected. Of course, these are merely arbitrary estimates, and, of course, we are all wrong. We may as well admit that in the beginning. However, I have seen it estimated that any man or woman who lives to finish a college course has cost somebody $25,000 in money. Of course, if they turn around and die, you would have a considerable loss.

Then, again, it is difficult to evaluate various items in health work, because every single piece of health work that is done reacts on every other single piece of health work. I have stated privately, and I am willing to state it publicly, that *per se* the hookworm work done in North Carolina was not worth very much. That is my opinion. But as a piece of educational work in North Carolina it has had its reaction on every single thing that has been done in this State in public health work since that day, and it has been worth a thousand times more than it cost from that standpoint alone. So it is difficult to make these separate evaluations. I would not want to be in charge of the Bureau of Tuberculosis of the State Board of Health if I had to be in strong competition with another bureau, if I could not lend them a hand occasionally and if I could not get a service from them occasionally when I needed it.

I just mention these things to show you how difficult it is to separate these things and evaluate them separately. In estimating the value of tuberculosis work I wish to give others a large share of the credit, and not give it to the Bureau of Tuberculosis alone.

Quoting Dublin again, he has estimated that the value of the human life for one year is $100—less than the ordinary hod carrier makes in a month. He estimates the number of years that every person would live longer if tuberculosis were eradicated at four yars. On the basis before mentioned, Dr. Dublin has estimated the value of eradication of tuberculosis in North Carolina at $1,000,000,000, and the eradication of tuberculosis in the United States at $50,000,000,000. Now, we might take another arbitrary argument, and discuss it along the lines Dr. Smith used. I take it for granted that all the health officers are doing better work along that line

than Dr. Smith, but I doubt if it is so. Anyway, he is setting a mighty good example to health officers. In 1910 I believe it was estimated from that part of North Carolina which had vital statistics that there were in round numbers 4,800 deaths from tuberculosis. In 1918 there were 3,300. That is 1,500 fewer deaths in 1918 than there were eight years previous, from tuberculosis. I have thought a good deal about what those 1,500 lives are worth, and how to go about computing the value.

In studying the matter I have thought that we might go about it in this way, that the total incapacity from tuberculosis would be about three years' total incapacity for each death. If I were to multiply that by ten I think I would be about right, but I do not want to get the figures too high. An ordinary laborer gets about $4.00 a day. Taking out Sundays and holidays, and other days on which he does not care to work, and saying that he works about 300 days a year, he makes $1,200 a year. Now, of course, a great many of us do not make as much as an ordinary hod carrier, but he does not have to be able to write his name and he does not have to be able to read. But one thing is necessary—he must not have tuberculosis or typhoid fever, he must be well and strong. Suppose he works only one-fourth of his time, still he pays six per cent interest on $5,000. If he is going to be sick for three years he will buy a lot of patent medicine, and he is going to have a doctor some time or other, or perhaps a nurse. He may have nobody in the world, and unless the community is going to let him die worse than a dog dies, or a horse, the community will send him to a hospital. Suppose it costs about $1.50 a day—and that is putting it pretty low—and when he dies the undertaker will charge him something. Now, if he has children, eighty per cent of them will be infected. We do not know exactly how it is done, but we know that eight of ten people who are closely associated in a house with a case of tuberculosis are going to have it. We have proved this statement within forty miles of Charlotte, and the United States Public Health Service has proved it in Wisconsin. So he has infected his family. In round numbers, let us say that he has cost $10,000. Now, if there are 1,500 fewer deaths now than eight years previous, that is $15,000,000.

I have talked long enough, I am sure, and have no doubt proved to you, as I stated in the beginning, that it is impossible to fix a value on these things. But if we do not know, as Dr. Chapin says, just what it takes to transmit tuberculosis, if we should spend every year all the money that has been spent up to the present time, and if at the end of 100 years we were to find out how it is transmitted and how to stamp it out, it would be worth all the money, and many times more.

Discussion of Dr. McBrayer's paper: Relative Values and Financial Equivalent in Tuberculosis Prevention Work.

Dr. A. C. Bulla, Winston-Salem, N. C.

I do not feel capable of standing up here and talking about tuberculosis after Drs. Chapin and McBrayer have already had their say. But we do know a few things about tuberculosis. We know that people contract it, develop it, die with it, and we know about how many people are so unfortunate. I shall not attempt to say exactly when it is contracted, how soon developed after the first initial infection, because Dr. Chapin says that he does not know.

I have been associated with tuberculosis for three years, and the more I see of it the more I am convinced that it is contracted in early childhood or in infancy. When we consider the extent to which the disease is passed on within the family group, which is so conspicuous that up until a few years ago everybody believed it was hereditary, with its varying period of latency, we see more reasons why early health supervision of children is important. Then, too, when we consider the great prevalence of the disease, its pre-eminence as a life taker, its hidden existence, the long period of suffering for each case, we can see why we should put forth a greater effort to learn more about the disease.

In looking at Dr. Chapin's chart of relative values in health work I notice that he has given hospitalization a real value, which I am convinced is true. We have in Forsyth County a Tuberculosis Hospital, and I am convinced that it serves a valuable place in Public Health Work. While I am not of the opinion that every county should have a tuberculosis hospital, but I am convinced that a county or a group of counties should have a general hospital; one ward which could be used for tuberculosis patients; another ward for indigent patients of a general nature; a children's ward and an operating room. This, in my estimation, would serve the problem of a hospital in a general way more satisfactorily than one especially for tuberculosis. In my opinion, a county or group of counties with a population of fifty to seventy-five thousand people is justified in having a general hospital.

Discussion of Dr. McBrayer's paper: Relative Values and Financial Equivalent in Tuberculosis Prevention Work.

Prof. L. M. McCormick, Asheville:

I agree so heartily with Dr. McBrayer that it seems as though there is nothing more to say. Tuberculosis is one of those diseases which are so obscure in their origin that we have not found out much about them. It is only a few years ago that it was regarded as an organic disease. When it was announced to be communicable, the whole medical world hooted at the idea. The great advance which has been made in the control of this disease is in education. We can do very little until the people find out the nature of the disease, how to prevent it, and what precautions to take to minimize the possibility of contagion. In my city of Asheville we have probably one of the lowest death rates from tuberculosis among the residents of any city in the world. While the average T. B. death rate is 146 per hundred thousand, in Asheville it has fallen as low as 13, and it will probably stay at about 75 from year to year. I think this is due probably to the fact that in Asheville everybody sees so much of tuberculosis and hears so much about it that the prevention of tuberculosis becomes part of their education. Sometimes, of course, this degenerates into phthisiophobia. On the whole, however, the citizens of Asheville are not afraid of it, but they take precautions from the beginning, and for this reason Asheville has, as I said, one of the lowest death rates from tuberculosis of any city in the country. People come there suffering with tuberculosis, and we welcome them—more or less. Our motto is: "Asheville opens wide her gates to the sick and the well from every clime, but she demands that the sick shall

so comport themselves that they shall not become a menace to the health of her citizens or the stranger within her gates."

The greatest relative value in the treatment, prevention and eradication of tuberculosis is education. The worst foe of the prevention of tuberculosis is unreasoning fear of the disease. For, like the fabled chimera, tuberculosis can be conquered only by fearless, intelligent attack. Panic dread is as potent a factor in the spread of the disease as is the carelessness and indifference that is bred of ignorance.

As has been pointed out by Dr. Chapin and Dr. McBrayer, it is impossible to fix a relative value between the different methods of preventive work in tuberculosis, for the weapon which is effective today may be useless tomorrow. All preventive work, whether it is education, hospitalization, or sanitation, has its place, but their effectiveness shifts so rapidly that I am not capable of placing a relative value on any one of them.

Discussion of Dr. McBrayer's address.

Dr. D. C. Absher, Health Officer, Kinston, N. C.:

When I was health officer for Vance County a few years ago, we had a County Board of Health regulation which required all cases of tuberculosis to be reported to the county health officer. The health officer was then required to visit the case and give proper instructions for hygiene and prevention of spread. He then forwarded the report of the case to the State Sanatorium.

It is my belief that all counties and cities having full time health officers should handle tuberculosis in this way, and where there is a public health nurse the cases should be followed up. The nurse can also follow up those incipient cases found in making Life Extension examinations.

Dr. Meyer, of the International Health Board, in a paper recently published gives relative values for units of public health work as follows:

Tuberculosis	12.1
Venereal Diseases	6.6
All other communicable diseases	25.3
Infant Hygiene	20.3
Privy and Well Sanitation	3.5
Milk Control	2.7
Fly and Mosquito Suppression	2.4
Food Sanitation	.1
Inspection School Children	7.0
Vital Statistics	5.0
Education	5.0
Dispensary and Clinics	5.0
Laboratory	5.0

In view of these values and the co-operative county health work of the State Board of Health, it is seen that many of our counties would have health departments of higher efficiency if a little more work were done on tuberculosis.

AFTERNOON SESSION—DR. LONG IN THE CHAIR.

FINANCIAL EQUIVALENT OF THE PRIVY.

H. E. MILLER, C. E., Raleigh.

The privy is an indispensable institution. Whether or not its presence constitutes a menace or blessing to its users and their neighbors, depends upon the manner in which it is constructed and maintained. Sanitarians have demonstrated the effectiveness of the sanitary privy as a factor in the reduction of fecal-bourne disease. Although not remarkable, it is generally recognized that, wherever improved sanitary conditions have effected a decrease in the prevalence of fecal-bourne disease, a general decrease of other diseases, not commonly recognized as fecal-bourne, occurs.

Evidence of this character is convincing to the man of a trained analytical mind, but cannot be comprehended by the average layman. The one universal standard which he and all mankind can fully understand and comprehend is the money value, the financial equivalent.

The health officer must recognize that he is a public commercial agent in the field of competition with commercial industry. His customers are stockholders of a firm with paid in capital of $250,000,000,000 (vital assets of the United States in human life, on basis of figures current for 1907), while an official estimate on the same basis places all other wealth of the United States at 107 billion dollars. He has something to sell to these stockholders which will make their shares pay dividends. In order to make sales he must be able to show that a dollar invested in a sanitary privy will yield greater dividends than any other investment of the same amount. For this purpose the Health Officer must have a supply of economic data, showing what dividends have accrued to other investors under similar conditions.

Unfortunately, in the past there have not been sufficient precedents of universal community installations of sanitary privies, from which reliable data can be secured. Figures, more or less reliable, have been obtained from four Southern towns ranging in population from ten to twenty thousand, in which complete sanitary privy systems have been installed.

Let us assume that X represents the financial equivalent of the sanitary privy, then

$$X \text{ equals } \frac{R-C}{N}$$

R represents the economic value of the deaths and cases of sickness prevented. Since we know that a reduction in the prevalence of other fecal-bourne diseases than typhoid as well as a general improvement of the health of the community is effected by the installation of sanitary privies, we will balance these factors against the effect of vaccination and other measures, and assume that the privy is responsible for all typhoid fever reductions. C represents the cost of that part of the Health Department activities, necessary to bring about the installation of sanitary privies. N represents the number of open back surface privies replaced by either sanitary privies or sewer connections.

In order to obtain R we must know the value of human life and the average cost per case of sickness. On the basis of values current in 1909

Fisher estimates the value of the average human life at $1700. The value of the items of consideration have more than doubled since then, therefore a reasonable figure based on present values would make each death prevented an ecnomic saving in earning power of $3,000. On the same basis the average cost per case of sickness is $30, therefore we may conservatively estimate every case of sickness from typhoid fever prevented as an economic saving of $50. The value of R then becomes: Number of lives saved times, $3,000, plus the number of cases of sickness prevented times $50. C and N are self-explanatory.

By means of the data in the following table values for R C and N of our equation may be obtained. When these values are substituted for the symbols, the equation may be solved for X.

1, Greenville, S. C.; 2, Anniston, Ala.; 3, Salisbury, N. C.; 4, Rocky Mount, N. C. The case and death rates for Anniston and Rocky Mount for the period prior to sanitary privy installation appear to be abnormally high, but balanced against Greenville and Salisbury a reasonable average is obtained.

Reduction		R-C	C	Unit	N	X
Cases	Deaths	Saving in human life value	Cost	Cost	Number open surface privies reduced by san. privies & sewerage	Net saving per privy.
1 44.4	3.2	$ 9,850	$1350	$0.85	1,600	$ 6.15
2 102.1	8	27,100	2000	0.96	2,098	12.90
3 42	3	9,100	2000	1.06	1,891	4.80
4 113	7.5	24,600	2000	1.14	17,505	14 10
Average 75	5.25	17,765	1837	1.00	1,835	9 48

1. 127 cases and 9 deaths reported Nov. 1 to Dec. 31, 1917; 43 cases and 1 death reported 1918; 6 cases and no deaths 1919. Average for 1918 and 1919, 25 cases and 1 death; 1698 privies and 400 sewer connections.

2. Estimated.

3. Pro rata figures.

4. (Average several years prior. Deaths estimated.
(Since 1915 no cases of local origin.

5. 120 cases in 1916; 8 deaths estimated. Past three years average 7 cases and one death; 1500 privies, 250 sewer connections.

Striking an average therefore for the data at hand, we find that X equals $9.00, the financial equivalent of the sanitary privy.

The figures of the foregoing table apply to towns and cities. Statistics for North Carolina show that there occurs annually one case of typhoid fever per thousand population in rural districts, while there are five to six cases per thousand population in the unsewered towns, villages and suburbs. A further item of consideration is the fact that the privy in rural sections is in fly range usually of only one home, that for which the privy is provided, while in the towns and villages the privy is within fly range of from 15 to 20 homes. The foregoing figures would indicate that the risk in rural districts is only one-fifth of the value arrived at for privies in towns and villages, or $1.80.

It has been demonstrated in many instances that sanitary privies are not a permanent protection against filth-bourne disease unless they are properly maintained. Maintenance is just as essential as construction. The U. S. P. S. records cite three instances in which successful privy construction campaigns were conducted. All three communities rated high and in approximately the same figures at the close of the campaigns. One community employed an inspector to enforce maintenance. The other two did not. After three years the three communities were rated again. The first community received a rating higher than the original. The privies in the other two communities had consistently reverted to E type. Therefore if by effective maintenance inspection, the Health Departments hold this yearly typhoid fever rate down to or below the figures for the first year or two years after privy construction, as great an annual dividend accrues from maintenance as from construction.

Discussion of Dr. Miller's paper: Financial Equivalent of the Privy.

Dr. A. J. Warren, Charlotte, N. C.:

I wish to present a concrete example of the financial equivalent of the privy. For this illustration we will take the city of Charlotte. Prior to 1919 there were over three thousand open surface closets in the city. For the five-year period just prior to 1919 the average annual cases of typhoid was 153.5, while the average annual deaths were 17.5. What does this mean in the language of the dollar? The economic value of an average human being is variously estimated at from $3,000 to $8,000. For our purpose we will take the smaller figure $3,000. Three thousand times 17.5 equals $52,500 in human values alone. If we estimate the cost of a case of typhoid fever, doctor's bill, druggist's bill, nurse's bill and time lost from labor at the ridiculously low figure of $50 per case, we have again 50 x 153.5 equals $7,675—making a total annual economic loss for the five-year period of $60,175 for this one preventable soil pollution disease.

The Health Department of the City of Charlotte installed in the City a system of improved privies where sewer was not available. This work was not completed until the spring of 1919. And yet for the year 1919 the very thing we had promised the City happened. The morbidity and mortality rate for typhoid fever took such an abrupt "slump" that it almost startled a somewhat staid city. The morbidity rate fell from 153.5 to 34. and mortality rate from 17.5 to 5. The total economic loss for 1919 from typhoid fever being only $16,700. The net gain over the average five-year period being $43,475 for this disease alone. A dividend of $43,475 on the privy investment. And was this not the only dividend that the investment paid in the same year?

Diarrhea and enteritis under two years of age in the South is a filth-born disease to a very great extent; the open surface closet playing an important role in its propagation. For the two years just previous to 1919, the average mortality for this classification of diseases was 54 babies. If the death rate from a given number of cases is 10%, and this I believe to be too high, this number of deaths—54—would indicate an average morbidity rate from this disease of 540 for the two-year period. If we take as the economic value of these children not $3,000 but $1,700 we would have

an item of $91,800—loss from deaths alone. If we place the total cost of each case at $10 per case we have another item of $5,400—making a total average yearly loss of $97,200.

The first year after the privy system was installed, the morbidity rate fell from 540 to 220, while the mortality rate fell from 54 to 22. The total loss for 1919 being $39,600. A difference of $57,600—which is a second investment on the privy system installed.

I realize that the morbidity rate used in this discussion is only an approximation, but the mortality rate, which is by far the largest item, is accurate, according to our official mortality statistics.

FINANCIAL EQUIVALENTS IN HEALTH WORK.

Dr. W. S. Rankin, Secretary State Board of Health.

You will recall, Mr. President, that you and the Secretary, when you were making up the program, very kindly mentioned to me some of the ideas in which you were interested, and we discussed this question of financial equivalents. It is to me the most important thing we can consider in the health work of North Carolina right now, and I have a very decided opinion that you will see the entire program of local health work, so far as the State is interested in it, shifted to a basis of financial equivalents within the next six months.

There are two important administrative principles that an individual or an agency may use in getting a piece of work done. One principle is to employ a man or an officer and pay him a salary to do a piece of work. He may or he may not do it. Three times out of five he will succeed; two times out of five he fails. That is one principle of getting health work done. That principle has two very decided disadvantages. In the first place, the man who pays for the work is assuming all of the risk. The second disadvantage is that if a man holds a public office and follows that principle, sooner or later he will build up a large personnel. We have never had that to deal with in North Carolina, but we have had to use considerable influence in the placing of local health officials. I do not think that we have taken much initiative in the appointment of health officers, but county after county comes to us and asks us to suggest one or more available men. Now, I do not like that kind of business—I do not like even to furnish three or four names to a county from which to make a selection.

The other principle of getting work done through a public office is not to pay salaries, but to pay for the work done. If we can establish in North Carolina a financial equivalent—and I will show you how we can do it—for every single item of health work in the county in which the State is interested, we may quit paying so much a month on salaries, but we shall pay a proportion on the work done. Let me illustrate.

Dr. Cooper is employing about five public health nurses. They have their own machines, go into a county, see the parents of children who have bad throats, and persuade the parents to have the child operated upon. How much does it cost Dr. Cooper to have the average child operated upon? $7.50. Now, don't you see how easy it would be to say to a health officer, "For every operation you have performed on a child for bad tonsils or adenoids we will pay $7.50." If Dr. Jones, for instance, gets one hundred

operations done, we would pay him $750.00. We would not be paying salaries any more, but paying for piece work.

Let us say, for example, that a reasonable cost for typhoid vaccination is $1.00, and that the State is willing to pay one-third. Suppose Dr. Jones does three thousand vaccinations in a year. The State paying one-third, he would get a check for $1,000.

If this principle is adopted in local health work, one does not spend a dollar except for work done. It makes no difference who is selected as health officer. If the county gets a poor man, the county pays the bill. If the county gets a good man, the State helps to pay the bill. The State will assume its share of financial responsibility for county health work. The system will fit whether a whole-time man is appointed or a part-time man. The system will fit any county. It makes no difference whether the town does the work or whether the county does it. The system of maintaining an office with a great big personnel is entirely done away with.

To inaugurate such a system, the Governor will be asked to appoint a commission of business men—not health officers, not doctors, but a commission of the best business men in the State—to take the data, some of which you heard this morning, regarding every single item of health work and to find a sum which represents the reasonable cost of each item of health work. Dr. Bulla, in Forsyth County, has four hundred dependents to look after each month, but he gets no more credit for it than those health officers who have only fifty to look after. If the care of dependents is worth 50 cents a month to the State, he would be allowed a credit of $200 a month.

When the values are fixed, the State will send the health officer a check each month for one-third of the total cost of the work. All this discussion has tended to the establishment of a financial equivalent for every kind of health work—pay for the work, not for salaries. When we can go to the General Assembly and say, "For so much money you get so much work; if you don't get it, you do not lose a cent," there will be no more trouble in getting appropriations.

Another thing—when you go to a county to get a whole-time health department, you will have something to show them—you will have a table of values which has been worked by the best business men in North Carolina, and you can show them what they should reasonably expect for their money.

PUBLIC HEALTH NURSING AS IT RELATES TO COUNTY HEALTH WORK.

Rose M. Ehrenfeld,
Director Bureau Public Health Nursing and Infant Hygiene, North Carolina State Board of Health.

I feel toward the Health Officers much like a U. S. P. H. S. man who recently spoke to 3000 nurses in Atlanta and said: It frightens me a great deal less to meet One of you 3000 times than to meet 3000 of you at Once.

The Public Health Nurse is today the focus of interest in the whole public health movement: And—in view of the growing importance assigned

to the role of the p. h. nurse in State, County and Municipal health programs (while her profession is of no recent origin and still in formative stage) it is essential to provide a directing agency to guide in the development and standardization of her work.

The South especially is approaching their health problems with the COUNTY as a logical unit of health organization, and if so organized they can direct efforts along health lines through the proper channels.

The Bureau of Public Health Nursing and Infant Hygiene established jointly by the American Red Cross and State Board of Health—in addition to an extensive infant hygiene educational program—has become responsible for:

1. Organization and promotion of p. h. nursing on a County basis.
2. Establishment of minimum standards.
3. Securing of scholarships for, and appointment of nurses.
4. Supervision of their work. The Bureau has a public-health-nurse-Director and two assistants who act as supervising nurses.

Supervision is a matter of co-operation and construction, and not (as so often assumed) of repression and restraint: and has been defined as "democratic leadership of a staff in such a way as to develop a high standard of work." The nurse does not so much need additional technical training, but rather aid in utilizing group methods—and a supervisor, by establishing such means as conferences, a system of reports and advisory visits, will bring her associates to *form policies* and will turn all the resources of the community to make her associates free to carry out and improve these policies.

The County nurse is a practical instrument in meeting the fundamental needs of the country people. Some of the Fundamental needs of the unreached family in the open country can best be determined by asking the question—"Why is an unreached family?" We remember puzzling (as children) over the question of "Why is a cow?" to which there seemed no answer, but to "Why the unreached family?" there is an answer:

1. Because there are no hospitals.
2. The number of people afraid of hospitals, prejudiced against them —or the limited capacity of the hospitals.
3. The country not supplied with physicians.
4. The fee attached for medical service.
5. No attendance for the sick-bed at time of confinement.
6. Because the state legislation does not provide for its people. (When a sheep dies it is money out of the pocket—when a person dies—"he has to die anyway.")
7. Because they live in a place where extension work ordinarily does not reach.

In no way is the nurse an acceptable substitute for a health officer. She may precede in a county the health officer, but a full time health department is one of the developments for which she works. Most of the nurses accept scholarships for public health training with in view "assignment to some particular field"; and the ones assigned to Counties all spend a day at the Bureau office in advance of taking up the work. On that occasion they are told of the opportunity that is theirs as pioneer workers and that public health nursing in their particular counties is going to reach just where they

take it and the effectiveness of it is going to be just what they make it. They are acquainted with the general working plan of the State Board of Health—given a copy of "compilation of public health laws for North Carolina" and receive detail instructions in the units of work to be undertaken; as well as the system of records and reports—and are made to realize they are not isolated workers in independent fields, but rather each in her own county (as representative of the two Agencies backing her work) is to have the advantage of information both the Red Cross and the State Board of Health furnish—and that her work is an integral part of their combined program.

Where there is a full-time county health department, the nurse is of course detailed to that department and works under the direction of the County health officer, although her work is usually financed by an outside volunteer agency. (At the present time provision in county health department budgets for a nurse is made in only two North Carolina counties.) In counties where there is no full time health department, she works under a council or committee for 5 to 15 members, (including representataion of the Red Cross Chapter, Board of Health and other representative county organizations)—and does practically the same units of work as undertaken where a health department exists.

The greatest value of the public health nurse lies in the actual educational work in the field. Her humanity is the medium through which she wins people—her professional ability and advice, the gifts she is privileged to offer. The ultimate aim of the development is to have nurses in proportion to the population in sufficient numbers to do all kinds of public health nursing. But, in launching the work with one trained worker, the contribution she can make to as large a territory as a County depends upon the geography, condition of roads, transportation, etc.

Taking these into consideration, it is obvious that no appreciable amount of bedside care can be given, for which reason there is a possibility of her position in the county being misunderstood unless—upon arrival—she gets in touch with the individual physicians or the County Medical Society and offers her assistance in clearly defined lines and makes clear that her presence (as well as the instruction she will give the rural women in carrying out physician's orders and better caring for patients in the homes), will mean more intelligent co-operation on the part of their patients. It should be made clear at that time that she will stay within the jurisdiction of a nurse and that, if her work is successful, the physicians will receive calls earlier.

It must be remembered her work is primarily preventive and educational. While the position of bedside care in the program of one-nurse-to-a-county must necessarily be in the rear ranks, its value *as an opportunity for teaching* is appreciated. It is sometimes the only means of gaining family confidence and co-operation. For this reason it is to be recommended by periodic visits giving demonstrations, instruction and encouragement for like attention by a member of the family, rather than in the nature of spasmodic private duty as some of the physicians seem to expect.

After carefully studying the greatest need of the counties and planning for the utilization of one worker's service to the best advantage, the nature

of activities and scope of duties at present undertaken by the COUNTY P. H. Nurse are indicated in the following units:

I. *The Unit of Tuberculosis*—which calls for:

1. Securing the names of reported tuberculous cases in the county.

2. Visiting them in their homes as often as possible to give such nursing attention and the household such necessary instruction to secure best care of patient and proper protection for the family.

3. Visiting every discharged tuberculous soldier, sailor or nurse with the plan for sanatoria treatment as furnished by State Sanatorium.

4. Educational campaign through public schools by means of lantern slides, lectures and distribution of literature, furnished by sanatorium.

5. Investigating general health of families where there is or has within three years existed tuberculosis and arranging for diagnostic clinics. (A diagnostician from Sanatorium, nurse from Bu. P. H. N. & I .H. together with the county nurse make the clinical personnel. Three such clinics have been held and three appointments for May.)

6. The nurse will try to secure care or treatment for all Tb. cases found, according to available resources. (Either state or private sanatorium treatment or through a clinic, supervision of family physician, county health officer or county physician.)

II. *The Unit of Infant Hygiene*—which calls for:

1. Individual or group instruction of midwives in the principle of personal hygiene and hygiene of pregnancy.

2. Individual or group instruction of women in essentials of home sanitation; pre-natal and post-natal care; feeding of infants—and physical inspection of children brought by their mothers to the nurse.

3. Keeping track of breast-fed, bottle-fed babies and children under two years of age suffering from digestive disturbances and diarrheal disease. It is here especially that the State plan is proving itself practical and *carrying* to the unreached family at the head of the hollow—*where the nurse* visiting in the home *is interpreting* to the mother handicapped by lack of education, the pre-natal advisory letters sent. In sections of the open country where the boulevard fades into the squirrel track that runs up a tree, *it is she* meeting the great need by planning a better balanced diet for the all-too-frequently-undernourished country child, from the limited variety within the reach of the mother. It is here that conspicuous pieces of *preventive work* are being accomplished—and from here that frequent expressions of gratitude are received.

III. *The Units of Quarantine and Soil Pollution* call for:

Assistance to the County health director in performing the duties required by law for the control of communicable diseases and in finding or treating children with hookworm—and by educational means seeking to bring about widespread adoption of sanitary privies.

I believe there will be no appreciable "Back to the Farm" movement until the sanitary conditions of the rural districts are improved. The nurse grounded in and making the principles of preventive-medicine part of her life, can do much to improve the health and increase the efficiency of rural

people by conscientiously agitating sanitary improvements. If a farmer *is shown* that money spent for Sanitation is a good investment, he will invest —and thus encourage the "Back to the Farm."

Unit IV calls for co-operation with the Bureau Medical Inspection of Schools in assisting the health officer record and classify cards of school children with defects and through educational means help to secure proper treatment. In counties where there are no health officers, the nurse follows such specific instructions given by Dr. Cooper for her particular county.

A great need (as the county nurses see it) is for courses in normal schools and at teachers' institutes to prepare teachers for handling health subjects. (Generally they know neither what nor how to teach.) Also, the pupil's physical progress being recognized as worth recording and one of the factors to be considered in passing from grade to grade. (I recently heard a story that indicates the unpreparedness of the rural teacher. It was a history class, and to the row of boys on the front seat was asked the question, "How did Lincoln spend his life?" Replies of "On a farm," "Splitting rails," "On a boat" and "Sawing wood." Each in turn were all answered by "NO" from the teacher, who, drawing a deep breath, said: "Why don't you boys *learn* your lesson—*the BOOK SAYS 'his life was spent in HARDSHIPS'.*"

Now, the Rural Sections *need information,* and the way to inform them is through the schools, and the NEED for information is no greater than is the necessity of getting that information to work. If this story is an example of the way health subjects are being handled, has the time not come when the book with the number of bones, arteries and veins, together with their names, be cast aside and in its place THE MODERN HEALTH CRUSADE with the practical *doing of health chores.* The nurses have been instrumental in getting this movement introduced in some of the rural schools.

In some of the High Schools they are giving the standard courses of instruction in HOME HYGIENE and Care of the Sick; and we hope the time will come when this instruction will find a place in the curriculum.

We feel toward the school that *there*

1*st.* Should be required a thorough physical examination before the child is allowed to enter school.

2*nd.* A pair of scales in every school, to encourage physical progress by visible gain in weight, due frequently to proper diet, sufficient rest, less coffee as a substitute for milk, fewer movies, etc.

3*rd.* Time allowed for teaching health habits and teachers prepared to do it.

4*th.* So far as possible, a warm item in the school lunch.

5*th.* That every child's physical report should *go home monthly with the school record.*

In one mountain county the nurse has been instrumental in getting the moving pictures on health subjects run during Institute Week—and public health playlets given by the schools. *These are instances of effective EDUCATIONAL WORK.*

The following instances cited further testify to the need of the County Public Health Nurses:

(1) The nurse found seven midwives at a county-seat who were not registered with the State Board of Health, and an eighth in a nearby town. Another located four who claimed ignorance of the law regarding silver nitrate.

(2) We know of one county with 200 midwives; 75 of them have been reached by the Health Officer; 3 were men—1 white and 2 negroes. (Conditions such as these account for "accidents of pregnancy" and prevalence of blindness.)

(3) The Bureau of Vital Statistics issued in the year April, 1919, to April, 1920, 22,688 ampules of silver nitrate. In the last 4 months 10,904 were issued as compared with 11,784 in the preceding 8 months of the year. Dr. Register gives the County Nurses credit for half that increase.

From these instances—together with the value of such workers personally exemplified by the two county nurses on the program—it would seem that the action of a county in doing without a nurse to get a community building is the type of short-sightedness that leads a man to mortgage the home and buy an automobile. I believe the time will come when the County Nurse will be acknowledged as necessary as the county courthouse and when—through legislation—it will be made financially possible for her to do for humanity what scientific agriculture is doing for the crops *in proportion* JUST as these two resources are relatively valuable to the STATE.

ONE NURSE TO A COUNTY WITHOUT A HEALTH DEPARTMENT.

Mrs. Mildred Hargrave, Ashboro, N. C.

I do not know why I have been asked to speak here, because I am not a speaker, but I want to tell you what we are trying to do in Randolph County.

I went into the county in July of last year. We had then in the county one small hospital with eight rooms. I knew that I had to have the school children's adenoids and tonsils removed, but I did not know anything about North Carolina at all. I wrote to Dr. Cooper and learned that we could get the emergency clinic.

A young bacteriologist was sent in to vaccinate, and 4,000 people were vaccinated. Afterward I vaccinated about 300.

Then the County Superintendent of Education decided that we must have the teachers' institutes and have health lessons of some kind, so he called on me for help. I gave them health lessons in the mornings of about forty-five minutes, and I used this opportunity to get in touch with all the teachers. I taught them every morning for forty-five minutes, and then went with the farm demonstrator to hold the farm institutes. Sometimes I went to a night institute, and one night I introduced all the speakers in the men's and women's meetings.

The next thing was the examination of school children.

In my office in the courthouse I have a desk, a pair of scales, a fairly good file, and two or three cupboards loaned me by the good ladies of the

town. Every Saturday I have office hours, when the mothers come to see about their babies and the girls come to talk things over. One afternoon a girl came in and said that she was always tired and had been losing weight. I took her temperature and found it to be 99, so I sent her to the Sanatorium for an examination and it was found that she had an incipient case of tuberculosis. I took her under my supervision for about three months until she could get into the Sanatorium.

Then the question came up as to how to get the teachers' examinations made. So we decided that I would help for two days, and we got it done. Then we decided to have a clinic and to try to get a specialist from the Sanatorium. We had a clinic of 120 people, and I think that twenty-seven of them were found to be incipient or open cases. Among these were four teachers. They are doing light school work in the county, coming to my office on Saturdays, when I weigh them and talk to them about what they eat, etc.

Then I began examining the school children; 5,000 of the 10,000 in the county have been examined. Some of the children were afraid of me at first, but finally decided to let me examine them. Quite a number I found had very bad teeth and enlarged tonsils. I gave the children a short talk, speaking of the teeth, personal hygiene, etc. The children seemed to enjoy these talks.

We have in the schools some crippled children, for whom there is no provision. In Franklinville I found a little crippled boy, Frank. I asked him why he was lame, and he answered: "When I was three years old I fell through the floor of the porch and knocked my knee-cap out of place." I wrote to Dr. Cooper about him (I always call on Dr. Cooper when I am in doubt), and he gave me the name of a surgeon. A big-hearted man gave me $100 for Frank. So early one morning I took Frank and another child over to Dr. John Wesley Long in Greensboro. The parents of the other child were able to pay for her operation. Frank has had two operations, and is now walking. This child is unusually bright. Dr. Long will take out his tonsils and adenoids soon, because he wants him to have a chance with the other boys.

In another mill town (there are about ten mill towns in the county) we have a child crippled from infantile paralysis who will have an operation, and we hope will be all right again. Then Dr. Cooper is going to send a dental clinic into my county.

We have a community playground now with tennis and basket-ball courts and a gymnasium. We have a director for the gymnasium. We have back of the school room a place which we shall use as an open-air school room or as a rainy day play room.

That is about all we have done in Randolph county, but we want now to try to get home economics in all the schools.

SOME RESULTS OBTAINED BY A PUBLIC HEALTH NURSE.

Miss Clara B. Ross, R. N., Tarboro.

A beautiful interpretation of P. H. nursing was made a few years ago by an artist who painted a plaque showing a woman planting and tending a tree. This interpretation has been adopted by our national organization,

as our emblem. Can the result of work thus truly symbolized, any educational work, in fact, be reduced to rows of figures? Yet rings of growth on the tree can be found by the forester. Improvement in individual, family and community health as results of a year's plans and work are the rings we are to count.

At the beginning of the year a careful study of the county field and the splendid foundation for public health work built in the two previous years was made, and after hours spent over vital statistics and over county records with the Health Officer, it was decided that the usual Rural Health problems: (1) Communicable diseases, (2) Loss of infant life, (3) Indifference to the common ailments that sap strength and efficiency, (4) Much ignorance as to the relative value of food, (5) Seasonal rush of work, (6) Lack of modern home equipment and sanitary conveniences were ours. A few special ones seemed evident from the following facts:

Population 14,000 white, 21,000 colored.

Staple crops: Cotton, Tobacco, Corn, Peanuts.

No fences or few, 25,000 hogs and 3,840 cattle listed.

Large farms and tenant farmers.

The following tentative plan of Public Health Nursing was made:

(1) Instructive nursing visits to all cases of communicable disease reported to the Health Office and demonstration of nursing care in other cases of illness if asked for by the member of the family giving nursing care.

(2) Investigation and follow-up work in the 58 families who had a death from tuberculosis the preceding year—(no easy task among the tenant farmer class.)

(3) Child Welfare Study Classes were to be organized by a Weighing and Measuring Campaign among the pre-school children, to meet monthly, and bottle-fed infants and second summer babies were to be visited in their homes.

(4) A strenuous effort to add a colored nurse to the County Unit, which was composed of Health Officer, Nurse, Sanitary Inspector and Clerical Worker.

(5) Work in the schools to begin in September, which may be listed as follows:

(a) Demonstrations of tests for physical defects among school children to new teachers.

(b) Follow-up work, with Physical Defects referred to parents by the Health Officer, and in order to do this more intelligently to be present during examination—This follow-up work to be done by home visiting.

(c) Weighing and Measuring of school children monthly if possible and putting class room record on each wall showing under-weight, over-weight and monthly gain.

(d) Meetings with mothers to study cause of under-weight and how to get normal growth and gain for their children.

(e) Health talks to supplement the Health Crusade which had been put on by the County Superintendent and Supervisor of Teachers and the course of hygiene already well taught by many of the rural teachers.

Subjects to be stressed:

(1) Importance of a balanced diet.

(2) Importance of protective foods, Milk, Eggs, Leaf Vegetables.
(4) Economic possibilities of goat milk in the eastern coastal plain.
(4) Importance of correction of Physical Defects.
(5) One class in Hygiene and Home Nursing in the County seat High School—18 lessons as a part of the home economics course.

This plan was to be considered as a railroad ticket, good for one trip only, with stop-over privileges in a few places and one wreck near "Influenza Station."

A few results from the various phases will now be cited:

(1) A case of Tuberculosis was visited at a farm house, her father, brother, his wife and three small children were found in a comfortable home. Patient was coughing and spitting in a cloth in her lap, but was quite proud of the fact that she could help with the children. The mother of the children was shown the danger to her children, and in spite of the busy season, in less than two weeks, a porch was screened, the patient put to sleep and sit there and the most scrupulous care taken of dishes, linen and etc. The patient has progressed with the disease, but the family is being protected.

(2) Two children in a family where the mother died of tuberculosis in 1918 were found to be underweight. Chest examination and sputum test were negative. Temperature was found to be from 99 4-5 to 100 4-5. The boy dropped out of school, but the girl's P. M. temperature was taken by teacher for a period of three weeks and found to vary from 98 3-5 to 100 1-2. Home visits were made and the children are being watched by father and aunt and promised treatment is expected.

(3) The health study classes must be listed as vaccinations that "didn't take," although an important reaction was secured. It is a difficult matter to get mothers together in any center during the heated period, but by using Rural School Commencements with their all-day programs and County Club meetings, several hundred children were weighed and measured and checked up. Consultations with nurse and Health Officer given, copies of "Infant and Child Care" distributed. Many bottle babies were located and the mothers generally were assured the nurse was in the county to help *them*.

Dixie Consolidated School featured this weighing and measuring of the pre-school child with other numbers on physical education on its printed program of exercises for commencement day.

We gained a vision of the day when school trucks shall make a monthly trip to carry the pre-school child and its mother to the School Health Center and the day when our six-year-olds will enter school physically fit to do their school work.

(4) A home visit was made to the mother of a little girl who had a squint to advise seeing an oculist. She was waiting until the child was older, so that she would not break glasses, but went at once after the explanation.

Another when told about the need for an operation for adenoids was found to be waiting until the child was older.

A child refused his accustomed coffee and asked for milk which he didn't like when he found he was under-weight and wanted to come up to normal.

A high school girl took a quart of milk a day and taught her family to

eat cereals as a result of a consultation with the nurse about her under-weight and poor health.

Tobacco beds show an increased number of vegetable plants growing as a health measure, the result of the campaign for more leaf vegetables.

Fifteen mothers met the nurse and County Demonstration Agent at a school to study cause of under-weight and teachers asked that over-weight also be considered, as the children much over-weight were slow in school work.

(5) Through the Red Cross Seal Commission a colored nurse was provided for three months and through the Bureau of Public Health Nursing a suitable one was secured. The County and the colored people themselves have promised to see that her services are continued for the 21,000 of her race in the county.

One more result that happened because of no plan but that the nurse stopped to ask her way. A tenant farmer, his wife and sister, were found grading a $3,000 tobacco crop and showed with great pride that much of it was grade A, also spoke of their cotton. They were living in typical four-roomed tenant houses, no care, no garden, five children in the two families. One baby five months old fed on Condensed Milk was pitifully malnourished. The other, nine months old, had been breast-fed, but was being given biscuit and coffee. The family feared it had spinal trouble, as it couldn't sit alone. A cow was suggested. The Health Officer later examined the children and found no organic trouble. After a third visit, a cow was purchased and the nurse was able to demonstrate milk modification and teach the family how to handle milk for babies. Six months after the first visit the babies were both up to normal weight and the older baby was pushing a chair across the porch. The farmer refused to sell, although offered $40 more for the cow, because the babies needed her and the whole family felt so much better. A vegetable garden is already planted and was displayed with pride to the nurse. Pictures of the babies were taken when found and six months later and with the cow's picture between are being used as "Before and After Taking"; an "Ad." for a cow for every tenant farmer.

The results of this very definite success will not end with this family, but will influence others.

It is by better individual, family and Community health, that we count the rings of growth on our tree.

Dr. Reuben McBrayer, Sanatorium:

I would like to ask Dr. Rankin if he has any idea how long it is going to take him to get the General Assembly to appropriate enough money to pay for one-tenth of what his nurses are doing?

Dr. Rankin:

I do not expect ever to get the General Assembly to appropriate enough money to pay for what health work is really worth. We can determine, however, a financial equivalent for almost anything.

Take the matter of sanitary closets. That is a matter of record. Over 100,000 were built in this State and in other states, and the price was $2.50.

Of course, $2.50 is not the value of the privy, nor is $7.50 the value of the child whose health is improved by an operation for tonsils and adenoids.

Dr. Cyrus Thompson:

Gentlemen, I am not in good speaking condition today, for I have been under the weather yesterday and today. But my friend, Dr. Reynolds here, insists upon my speaking. He is nervous, in view of the fact that he has to speak tomorrow.

I am exceedingly interested in the papers which have been read here, and in none of them more interested than in the papers read by the ladies—or if they do not have papers, they talk. Mrs. Hargrave talked, as you know, of the things she was doing in the county of Randolph. It made me glad when she talked of the things she is doing, and though I am not feeling very well it made me feel like the springtime. I am not very pious, but distinctly religious; and the narration of a good deed puts joy in the heart of every man who has a spark of goodness in him. And when you talk of the things you do for children you stir up the heart of every good man and every good woman. I pity the man who does not love children. The greatest asset in all the world is the children. Some one said one day that you cannot make a man out of a child. A rude carpenter said that it was the only thing you could make a man out of.

My friend, Dr. Reuben McBrayer, asks a question which Dr. Rankin gets up and with some degree of temerity answers; and I wonder if my friend, Dr. McBrayer, is making any sort of "vile insinuation" against the Legislature of North Carolina. I want to make a defense, though not on personal grounds. I do say it for the General Assembly of North Carolina that in these latter years in the matter of health they have not failed to measure up like men when Dr. Rankin has gone before them. It matters not whether they were Republicans or Democrats, whether they were "publicans or sinners," they have measured up to what we wanted. And now that we are going forward to a just valuation of property in North Carolina, without burdensome taxation we shall have enough money to do the work that Dr. Rankin wants done.

Dr. Charles E. Low, Wilmington:

I cannot let this opportunity go by without saying that I believe the greatest force at the command of all public health officers today is an efficiently organized nursing service. As individual health officers we have for a good many years been trying to get the facts that we know down to the people. The public health nurse is the person who will put them there. She is the soldierette on the firing line who is going to take the facts that we have long known and put them in practical operation. The piece of work of which I feel most proud in my several years of public health administration is that of taking an unco-ordinated body of willing nurses, most of whom were paid by various independent civic organizations, and putting them together as a unit under a supervising nurse, as a part of my departmental organization. The efficiency which has been brought about in my department by that accomplishment is yet to be measured and never can be measured in dollars and cents. Every county that has any idea of organizing public health work should consider the nursing service

as the first item. The nurse is really the crucial element in the whole matter of getting the facts down to the people. Of course, we appreciate the difficulty of taking a nurse who has been doing bedside nursing and getting her to do public health work. But don't count out bedside nursing entirely, because it is the very fact that a nurse goes into a home and renders this personal service at the bedside that makes her an efficient worker. After she has established a cordial personal relationship founded on bedside nursing service she can ask anything and get it done. For that reason I am against specialized nursing, particularly in small departments. If, after a nurse has done general work in a family and they have formed an attachment for her, she goes there and asks for some special thing in tuberculosis, pre-natal, maternity, infant-welfare, or other work, she is more than likely to get it done, because there is the personal element of regard and friendship in it, while the family might resent the same request or suggestion from a special tuberculosis nurse or other specializing nurse, because the close relation and friendship established by the kind of service that a family easily appreciates was lacking.

NIGHT SESSION—DR. LONG IN THE CHAIR.

PUBLICITY AS A MEANS OF PROMOTING EFFICIENCY IN HEALTH WORK.

DR. R. L. CARLTON, Winston-Salem.

A year or two ago the membership secretary of the National Child Labor Committee of New York City said she had a friend who for many years was active in social work and especially in interesting the public in it and that this friend had changed the old adage, "Let not thy left hand know what thy right hand doeth," into another slogan: "Do all the good you can to all the people you can, and let everybody know it." This secretary says she likes to go him one better and adds: "Do all the good you can to all the people you can, let everybody know it, and get everybody to help." With this slogan, the speaker, a health officer of a few years experience, is in full accord. I believe you will all agree with me that, when through our publicity we have reached the people, have interested them in what we are trying to do and the means by which we propose to do something, we want them not only to say "It's a good work," but we want them to be inspired to do something to help in this work.

To my mind publicity and health education are synonymous terms. I am not sure the secretary of this association intended allowing me this great latitude when he assigned the subject of this paper—but he will pardon me if he did not so intend, if I use the two terms as practically interchangeable.

Health education is not an institution of long standing in this country. It is taking us a long time to realize that health is the one great asset of a nation and should be seriously considered. That it is being considered, nation-wide, is amply proven by the campaign against tuberculosis and by the child welfare campaign. These movements have demonstrated that curing is too slow a method of combating these evils and that better results can be obtained by intelligent care and by controlling predisposing factors—in other words, by prevention.

The kind of work which a health department can do will be that which a majority of the people wishes to have done; therefore, it is incumbent upon the department to so mould the feelings and knowledge of the individuals of the community that they will give their active support to the health administration.

People get their ideas of sanitation and hygiene from various sources—from tradition which is far more often inaccurate than correct; from physicians who will too often be easy going and not really see that their patients get the correct viewpoint as regards personal hygiene or proper ideas of prevention; from newspapers, which should be one of the most active sources of health propaganda, but which so frequently carry patent medicine advertisements and great headline news articles concerning some drugless quack healer nearly to the exclusion of statements of local or state departments of health; from the public schools, which are becoming more and more increasing sources of knowledge of public health matters; and, finally, from the activities of the health department which source of knowledge of public health matters to a certain extent includes all the others mentioned. Every health officer should be a teacher and every health department should be a school of instruction setting forth the fundamental principles upon which public activities are based and making clear, in language simple as the language of the street, if necessary, just what guarding one's health means, just how it is done and just what the department proposes to do to help the individual and the community to secure and apply those things necessary to prevent disease and to further the cause of good health.

Such instruction has as its objective legislation, the necessary funds, public co-operation and the effective carrying out of sanitary regulations.

The means at our command for such publicity or educational propaganda are legion. The newspapers constitute one of the most important means and should be used freely and sensibly. A health officer is fortunate when he can make a personal, confidential friend of the editor or reporter for one or more of the leading newspapers of his town. The papers will generally handle willingly all items of interest coming from the department if written simply and technical terms omitted. Just here let me say only items of interest shoud be handed out—and this does not mean that some of the activities of the department or that some of the items of public health matters should be purposely covered up—but that all items even those of statistics and regular reports should be so arranged that they will make an appeal to the public interest—that the public may be taken into the confidence of the department. Statements should be truthful and accurate and of value to the public—never should the department of health reach the point when it considers its duty to be to issue a continuous stream of bulletins, press notices, etc. Under such circumstances sooner or later advice or information not trustworthy will be given publicity. We do not have to go back very many months in our memory to recall just such circumstances when many of the health workers of this country were issuing instructions by the yard as to means of controlling influenza—which instructions in the final analysis frequently did not bear fruit to the credit of the department.

Hand-bills and special bulletins may be often used to advantage if some object is to be presented to large numbers of persons quickly. For instance, as means of announcing the opening of a clinic for tuberculosis, or a baby health station, circulars setting forth just such an item could be distributed through the schools by nurses, by sanitary inspectors, mailed out, etc.

Reprints of extracts from the annual report are of value—especially if setting forth some particular feature, such as the rating of dairies furnishing the milk supply, or the rating of food handling places, or mentioning some especial need, as additional public health nurses or additional clinics, etc.

Lectures, health exhibits, motion pictures portraying health subjects, are all of educational value by being a means of instruction to those in attendance and also by calling attention to the activities of the local board.

Another means of publicity is the campaign for some special object. The anti-tuberculosis campaigns of education have been one of the chief means of progress in public health work in the United States. The effects of such a campaign are always felt in all other lines of public health work.

Not only are newspapers, hand-bills, posters, bulletins, lectures, motion pictures, special campaigns, means of publicity and education, but the hundred and one little things coming up in the department of health are to be used with the objective—publicity and education in the mind. Every complaint received affords an opportunity to explain the sanitary principle involved; every case of contagious disease is a center for educating the family and neighbors; every case of contagious disease in school affords an opportunity of explaining to parents and children (our greatest asset), the methods of handling contagious disease; every daily inspection of school children is a means and a very valuable one, of publicity for the department and education for the child.

The speaker wishes to mention one or two items now in use in the department in Winston-Salem. The first is our practice of sending a circular letter of definite instructions to parents of children having contagious diseases, especially measles, diphtheria and whooping cough—and calling their especial attention to the dangers that might follow, warning particularly of tuberculosis.

Another custom is that of a monthly department letter to our dairymen. This letter is one of friendly interest in their business and each time calling attention to some particular item which should receive attention. These letters have been of value to all concerned—dairymen, milk consumers and health department.

Another thing we are doing since January 1st which is a particularly good stroke of publicity is the mailing to parents of every child born a certificate of registration of that child's birth, accompanied by a letter of congratulations and a baby record book. We are getting a most wholesome response to this activity on our part—the mother is pleased that we send her baby a book and a certificate of registration bearing the gold seal of the city and a blue ribbon and we are pleased that we are assured of her further co-operation.

Does publicity as a means of efficiency pay? We think most certainly it does, and we believe the activities of our own humble department of health bear out this statement. Three years ago we had two public health nurses, no clinics, no tuberculosis activity, practically no baby welfare work, dental clinics for school children were unknown.

Active, persistent setting forth the needs of the department and of just how we would proceed if given the right kind of co-operation was done. The newspapers helped, literature from our State department and from the United States Public Health Service was used, motion pictures pertaining to venereal diseases were shown, slides illustrating baby clinics were shown, leaflets entitled "Save the Babies" gave a few plain, unvarnished facts; leaflets entitled "Tuberculosis In Winston-Salem" did likewise; the health officer at opportune times appeared before local organizations, including the Board of Trade, with a few facts and suggestions—the result: legislation, funds and co-operation sufficient to provide seven nurses instead of two, two baby health stations, a central milk pasteurization plant, a venereal disease clinic, a tuberculosis clinic, a dental clinic for school children, a full time medical inspector for schools, other items in the same proportion.

Our conclusion is, that without education concerning health—and by this we mean sensible publicity—we can do very little.

Dr. G. M. Cooper, Secretary:

If you remember, last year the Committee on Resolutions brought out a resolution at the close of our meeting in Pinehurst requesting that the Secretary prepare certain blank forms to be sent to the health officers of the State on which they should prepare their reports. This resolution was adopted and I complied with it. I sent out these forms about six weeks ago, I think. I had intended, when I sent in this program, to put down a brief summary of reports from the counties by the Secretary, intending to get up a tabulation of these reports and giving the sum total of the salient features as a combined effort. But, in the first place, very naturally, most of the men waited until the last minute to mail their reports, and it has been absolutely impossible for me to make up a summary of them. So I will merely go over the few which I have received.

I have reports from forty-nine counties and three cities. That is by far the best response we have ever had in my experience of five years as Secretary. In addition to that, I might say that we have other counties represented at this meeting whose reports have not been turned in, which will bring up the total. We might run up the total to at least sixty counties represented here in this meeting today either by reports or by the presence of some representative, or both.

REPORT OF COUNTY AND CITY HEALTH OFFICERS FOR THE YEAR ENDING APRIL 1, 1920.

* before county indicates full time health officer.

COUNTY	Total visits to County Institution	Total Number Premises Quarantined	Vaccination Against Smallpox School Entrance Requirement	Total Number Persons Vaccinated Against S. P.	Ty. F.	Total Number Laboratory Ex. Made	Total Number Sanitary Privies Built	Con. Made	State Lab'ty Diphtheria A'ck'a Car. in City	Total Number Exam.	Treated	Total No. Employees in Health Dept.	Remarks
Alamance	75	243	Advised it	Very few	Very few	None	1000	None	No	None	1370	3	
Bertie	75	243	No	55	None	None	None	None	Yes	None	None	1	
*Beaufort	11	40	Hope to	55	None	None	None	None	Yes	None	None	1	
Buncombe	104	156	Only Lesson	300	2000	None	200	3	Yes	No reccrd	No record	1	
Caldwell	25	133	Graded	20 (about)	30 (about) (over)	None	3 No report	None No report	Yes	4221 No record	890 10	5 2	
Carteret	25	90	No	None	100	None	None	None	Yes	1112	41	4	
Chatham	14	61	No	18	30	None	None	None	Yes	None	None	1	
Chowan	18	110	No	60	None	None	No record	No record	One	7654	1864	12	
Cleveland			Recomended	No record	No record	None	399	40	Yes	1237	29	6	
*Cumberland	288	131	In city	6388	228	25	No record	None	No	1120	1193	4	
Dare	5		No	10	10		120	103	All		80	1	
*Davidson	193	267	In towns	124	2922	17	400	None	No	451	None	1	
Davie	30	158	No	20	300	None	268	16	on hnd		869	1	
*Durham		721	Yes in city	1018	4010	3117	1155	None	No	97		3	
*Edgecombe	73	191	Yes	1918	307	125	Building fast	Nearly all city	No	None	None	1	
*Forsyth	438	346 (about)	No Only in	238	510 Several	1346 Work-	2	None	Yes	1121	No record	4	
Franklin	63	300	infected	10	thousand	ing	300	None	Yse	300	236	1	
*Granville	25	464	districts				1421		Yes	300		1	
*Guilford	156	411	No	4090	None	5	None		Yes	200 (est.)		1	
*Halifax	21	237	Yes	1165	1942	51	173	277	H. D.	2350	408	2	
Harnett	61	299	No	954	18	109	100	None	Yes	252	30	6	
Iredell	90		Yes	None	None	None	189	2	No				
*Lenoir	176	360			6787		400	336	H. D.	1785	971	2	
Mitchell	6	don't know	No	641	2917	242	221	1	Yes	1759	1012	2	
Montgomery	18	240	No	100	50	None	None	2	Yes		None	1	
*New Hanover & Wilmington	191 when	344 so many	Yes	10 741	205 401	3 5526	None	None	Yes	Schoole None Many	Schoo!s None Many	2	
Northampton	22	220	Yes	1571	8296	66	538	269	Yes	25	5	1	
Pamlico	needed	can't	No	don't know	don't know	None			Yes	1000	None	1	
Pasquotank	120	267	Yes, in city	150	2000	None	No record	No record	Yes	25	7	1	
Person	Report in	form of lett	er. No definite figur	es.			573	30	Yes	2714	47	21	
*Pitt	130	863	No	4383	2595	292	438	69	Yes	436	236	3	
Polk	12		In Tryon, yes	150	3	None	30		Yes	None	None	1	
Randolph	no record	405	No	50	St. cam.	None	278	None	No	None	300	3	
*Robeson	94	207	No	703	2938	620		None	Yes				
*Rowan	61	2154	Yes	677	4611	237	500	525	Yes	1976	700	2	
Rutherford	Report in	form of lett	er.				Not known None	Not known None	3 No				
*Sampson	163	139	No	257	5078	293	562	49	Yes	8633	1342	9	
*Surry	14	87	No	760	1173	None			No	None	None	1	
Tyrrell	none		Yes	15	3		12	4	1 do				
Union	Report in	form of lett	er.				9	187	No	None	None	1	
*Wake		663	City, yes; Co., no	2486 None	10793 1500	5 None		(about)		1838	34	5	
Warren	32	85	Not enforced	(about)	(about)		None	100	Yes	None	None	1	
Watauga	15 or 20	89	No	200	250	None	None	100	No	300	645	2	
*Wilson		170	Yes	1021	2254	49	None	1400	No	558	356	12	
Yadkin	41	170	No	None	None	None						1	
Yancy	22	107	No	72	8	None				250	414	8	
CITIES					Done by					5000	641	16	
Asheville		90	Yes	2500	Co. H. O.	350							
Charlotte		100	Yes	2500		300							
Goldsboro		100	Yes	500	200	None							
*Winston-Salem		1520	Yes	4144	1200	1543				None	None	4	

County.	Health or Quarantine Officer.
Alamance	W. R. Goley
Beaufort	John H. Janny
Bertie	Hugo Muench, Jr.
Buncombe	W. H. Scruggs, Jr.
Caldwell	L. H. Coffey
Carteret	P. B. Loftin
Chatham	James S. Milliken
Chowan	J. H. Mitchener
Cleveland	B. H. Palmer
Cumberland	W. C. Verdery
Dare	Franklin P. Gates
Davidson	E. F. Long
Davie	J. W. Rodwell
Durham	Arch Cheatham
Edgecombe	Charles L. Outland
Forsyth	A. C. Bulla
Franklin	J. E. Malone
Granville	J. A. Morris
Guilford	Wm. M. Jones
Halifax	Paul C. Carter
Harnett	J. W. Halford
Iredell	Ross S. McElwee
Lenoir	D. C. Absher
Mitchell	C. E. Smith
Montgomery	C. Daligny
New Hanover	Charles E. Low
Northampton	Paul G. Parker
Pamlico	George S. Attmore
Pasquotank	Zenas Fearing
Person	W. A. Bradsher
Pitt	P. J. Chester
Polk	Earle Grady
Randolph	C. A. Hayworth
Robeson	E. R. Hardin
Rowan	C. W. Armstrong
Rutherford	J. C. Twitty
Sampson	E. T. Hollingsworth
Surry	L. L. Williams
Tyrrell	Howard J. Combs
Union	S. A. Stevens
Wake	Percy Ahrons
Warren	C. H. Peete
Watauga	J. W. Jones
Wilson	L. J. Smith
Yadkin	V. H. Couch
Yancey	J. B. Gibbs
Asheville—City	C. V. Reynolds
Goldsboro—City	H. B. Larner
Greensboro—City	B. B. Williams
Winston-Salem—City	R. L. Carlton

Here insert officers' Report Table

SOME IMPORTANT TOPICS.

Dr. W. S. Rankin, Secretary, State Board of Health, Raleigh.

I thought I would talk to you just a few minutes about some of the larger movements taking place outside of the State which will sooner or later have tremendous influence in North Carolina.

The first thing which is interesting is the situation at Washington, or the public health work of the Federal Government. You know that in the Executive Department of the National Government we have ten Cabinet Officers, and five of the ten Cabinet Departments are doing some public health work. That indicates that public health work is a very popular function with the Federal Government. Half of the Cabinet Departments are engaged in it. On the other hand, there is a very great disadvantage in having the Federal health administration so divided. The executive force behind the movement is divided and all effort at co-ordination is destroyed, and there is where we lose.

The Department of Agriculture, through the Bureau of Chemistry, is doing public health work. The Department of Commerce, through the Bureau of the Census, is doing health work, and so is the Department of Labor, through the Children's Bureau. The Department of the Interior is asking for an appropriation of $10,000,000, this amount being apportioned to the States on condition that each State put up a like amount, the combined fund to be invested in the care of school children, in teaching hygiene, and in the correction of the physical defects of childhood. The Department of the Interior is attempting to enter the field with rather large forces. Last, and most important of all, is the Public Health Service, which is under the Treasury Department.

One trouble with such division is that there is a certain amount of interdepartmental jealousy. There is a subconscious feeling, creeping out now and then in pretty lively language, that if one department get what it asks for, the other will not get all for which it asks. But here, to illustrate with a recent proposal of the Children's Bureau, is the worst thing about it, and the thing that deeply concerns the states and the counties. The Federal Children's Bureau (and I want to commend that Bureau for the splendid work that it has done—it has one of the brainiest women in the country at the head of it, Miss Lathrop) introduced a bill establishing a fund for infant and maternal hygiene work. This Bureau felt that, inasmuch as the Children's Bureau is a separate organization, it should have organizations in the states and work through them, and it sought to establish in North Carolina and South Carolina and the other states a state agency corresponding to the Children's Bureau in Washington. The bill provides for a commission in each state, and takes the whole problem of child conservation out of the hands of the State Board of Health. In other words, we would have in the states the same divided form of health administration as in Washington.

The same tendency is shown in the Bureau of Education's bill, carrying a ten million dollar appropriation. The bill puts the State Departments of Education in charge of the work in the States. The public health officials and the American Medical Association opposed that, and now the

bill says that the state agency shall be the state department of education or such agency as the state legislature may designate. The mistake made in these bills is in designating the state machinery and not leaving this to the states. So this divided health administration at Washington is a danger to the states, in that it threatens to divide the state health work into several parts.

For the last year there has been going on, supported by the American Public Health Association, the American Medical Association, and the Conference of State and Provincial Boards of Health, a considerable amount of work to bring about co-ordination of the work in Washington. The American Medical Association and the American Public Health Association have a joint commission which has been in Washington and has seen a number of Congressmen and other friends, and there is now a resolution before Congress calling for a commission to investigate and see how much duplication there is. If this Congressional resolution goes through, there will be appointed a commission of three Congressmen and three Senators, and an appropriation made to make a thorough investigation and study of the health machinery of the Federal Government and to make recommendations for the co-ordination and enlargement of the work. This will result in one of two things, either a Federal Commission on Public Health or a Department of Public Health. I have always leaned toward a commission, and so do the state health officials as a group. A commission can be taken out of politics. The members can be appointed by the President, two for two years, two for four years, etc. They may represent both the political parties if desired. A commission would be removed from politics, and that is the chief advantage. The disadvantage, of course, is that it is not as close to the President as a department would be. Those who advocate a department realize the disadvantages of a political head, but believe that these disadvantages would be compensated by a cabinet officer who would speak for the President. I believe that the next six months will see the creation of either a commission or a department of health in the National Government.

I might say a few words in regard to the extra-governmental field, which is even more important in its possibilities than the governmental field. The situation outside of the Government, among the people generally, is like that in the Government. There is a tremendous interest in public health in this country, and all kinds of agencies are being organized. We have a cancer society, a social hygiene society, the American Public Health Association, the National Association for the Prevention of Tuberculosis, and I do not know how many others. The multiplicity of organizations is a good omen in that it represents a tremendous amount of interest in the public health problem, but it divides the public health forces of the country into such small fractions that they lack the strength to get anywhere. But the chief disadvantage lies in the fact that the time has come when the people of this country are no longer to be regarded as beneficiaries in the public health movement, but are to be made participants; and how can they be made to participate if the forces are divided? People will be asked to join four or five public health agencies. Under such conditions you cannot build up the people themselves into a strong organization. We have to unite all of these, and then we can build up a popular health

organization of five or six hundred thousand people. Then the day of begging congresses and begging legislatures for money will be over. This is the larger thing in contemplation, and it is gradually coming about, and I think that some time in the next year or two will see something like that happen. There are large financial agencies in this country that are willing to give $100,000 to get a popular health organization on its feet. But these agencies cannot turn over their money to A or B or C without killing everything else, so these financial interests are waiting until these thirty or forty agencies get together. When the leaders of five or six of the large agencies, like the National Tuberculosis Association, the American Public Health Association, the American Social Hygiene Association, the American Infant Hygiene Association, can merge, money for organizing the people back of the public health movement will be available. It is proposed to be used in this way: Establish a public health magazine—a popular magazine. That will be made the binder, the means of tying people to this public health society, or whatever you want to call it. To my mind, that is the biggest thing on the public health horizon at present. Just now an able man has been employed for his full time to work out a plan of organization, and as soon as five or six of the large organizations can get together the thing will be done and the magazine will be started. The magazine is to be something like the National Geographic, except, of course, that it will deal with the general subject of health. We must have a great American health society, and I think that thing will come within the next year. It may be interesting, in this connection, to mention the fact that the National Geographic Society, a society built up around the idea of geography, has 630,000 members. Now, if the people can be interested in the idea of geography to that extent by means of a magazine, how many can be interested in a health program?

The American Medical Association is composed of two very distinct groups. It is divided into two parts, the scientific and administrative. The sections prepare the programs, invite the speakers, and so forth. The House of Delegates is the administrative body. Probably the public health society which I have suggested would be organized in much the same way.

REPORTS OF COMMITTEES.

Auditing Committee

Dr. A. Cheatham, Durham, reported for the Auditing Committee that they had examined the accounts of the Treasurer and found them correct. This report was adopted.

Committee on Resolutions

The report of this Commitee was presented by Dr. R. L. Carlton, of Winston-Salem, as follows:

Because of delays which frequently occur in the delivery of vaccines when shipped in the open mails we offer the following resolution: That the State Board of Health be requested to send vaccines, especially smallpox vaccine virus, by registered mail to health officers.

In view of the fact that others than Health Officers are becoming more and more interested in public health work and are becoming affiliated with

us as members of this Association, we beg to offer the following resolution: That the North Carolina Health Officers' Association consider a change in name, and that a committee be appointed to report concerning this at the next annual meeting.

Resolved, That this Association extend a cordial vote of thanks to the Y. M. C. A. management for the use of this hall for meetings and that our thanks be tendered the Entertainment Committee for their work in securing rooms for the members under very trying circumstances.

C. W. ARMSTRONG,
J. S. MITCHENER,
R. L. CARLTON.

The report of the Committee on Resolutions was adopted as read.

Committee on New Members and Visitors

This Committee had no report to make.

ELECTION OF OFFICERS.

Dr. Long: The election of officers is now in order.

Dr. Wm. M. Jones nominated Dr. Carl V. Reynolds for President. This nomination was seconded.

Dr. Reynolds:

I feel, Mr. President, that to be nominated as President of the State Health Officers' Association of North Carolina is indeed an honor. To be elected as President should inspire any man and every man who is doing health work. The prevention of disease and the preservation of life is very close to me, and always has been since I began practicing medicine twenty-five years ago. The Medical Fraternity of North Carolina have already honored me far beyond my expectations by making me President of the State Medical Society, and I am democratic enough and I hope considerate enough to ask you to distribute your honors. I thank you.

Dr. Cheatham:

In view of the fact that Dr. Reynolds is the President of the State Medical Society, I think it nothing but right that we comply with his wishes, and I rise to nominate Dr. J. E. Malone, of Louisburg. Dr. Malone is a pioneer in health work, and has done more work probably for less pay than any other man in the State.

Dr. Malone:

There is a Greek sentence that I remember: Glaucus eupthifone catebrothen. Translated, it means: "And Glaucus was eaten up by his horses." I have so many offices already that I am exhausted by the empty honors of office, and I would ask my friend, Dr. Cheatham, to take that burden off an old man and put it on a young man. As there are so many here who are younger and more capable.

Dr. Jones withdrew the nomination of Dr. Reynolds.

Dr. L. B. McBrayer:

I think that Dr. Malone is one of the sweetest souls that we have, and if he were willing to accept the office of President no one would be more pleased than I for him to have it. I do not think, however, that we ought to burden him if he does not desire to have the burden of the office or the responsibility of the office. If Dr. Cheatham does not want to withdraw the nomination, I will not nominate anyone else, but if he does withdraw it I have in mind someone whom I would nominate.

Dr. Cheatham withdrew the nomination of Dr. Malone.

Dr. R. L. Carlton, of Winston-Salem, was nominated by Dr. McBrayer for President. The nominations were then closed, and Dr. McBrayer was asked to cast the ballot of the Association for Dr. Carlton. The new President was conducted to the chair by Dr. Warren, Dr. Cheatham and Dr. McBrayer.

Dr. Carlton called for nominations for Vice-President, and Dr. L. J. Smith, of Wilson, was nominated by Dr. Warren. This nomination was seconded by Dr. A. C. Bulla, and Dr. Smith was unanimously elected.

Dr. Cheatham moved that Dr. Cooper be unanimously re-elected to the office of Secretary-Treasurer. The motion was seconded and passed.

There being no further business, the meeting then adjourned.

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